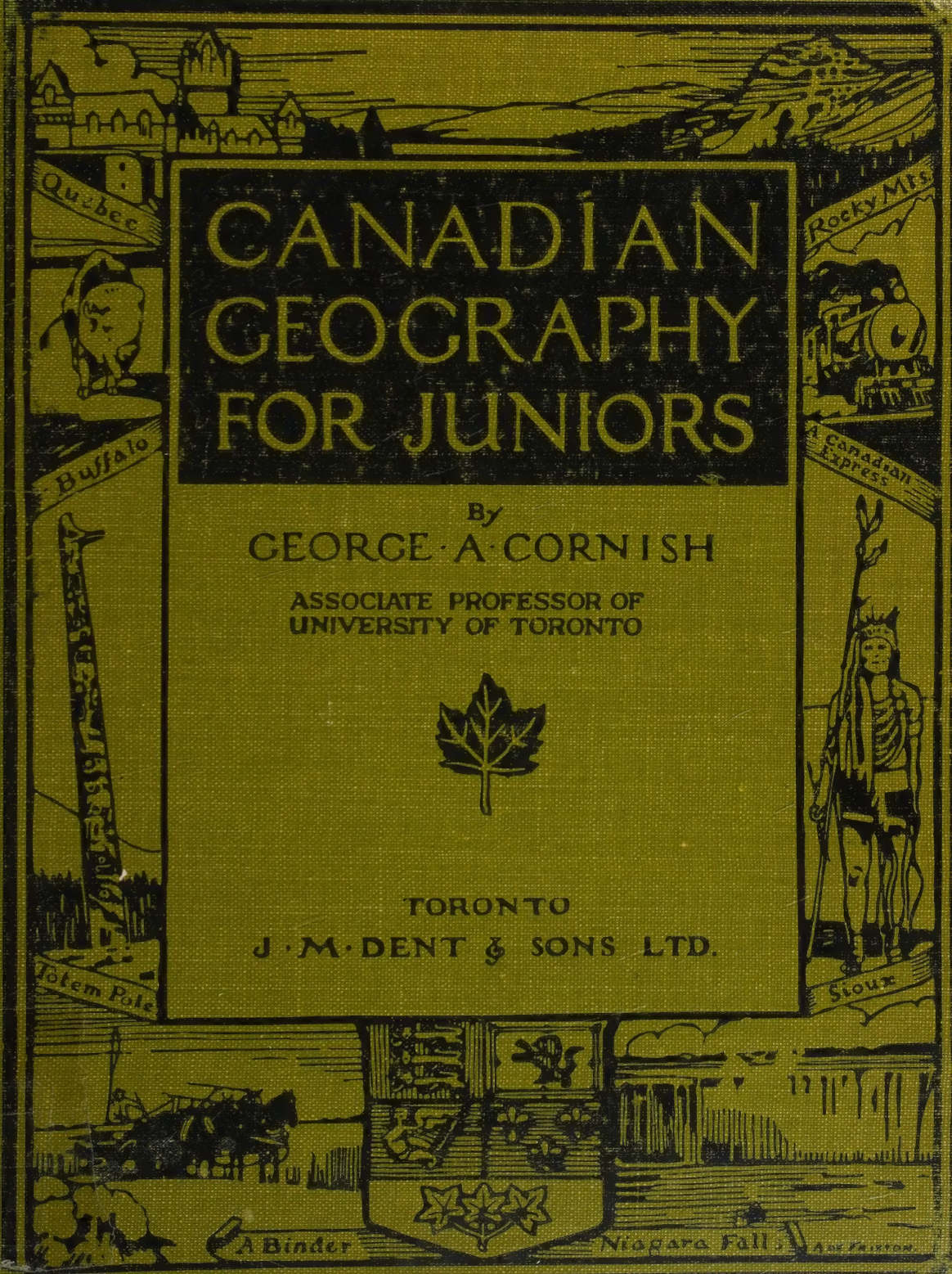


CANADIAN GEOGRAPHY FOR JUNIORS

By

GEORGE · A · CORNISH

ASSOCIATE PROFESSOR OF
UNIVERSITY OF TORONTO

TORONTO

J · M · DENT & SONS LTD.

Digitized by the Internet Archive
in 2024

https://archive.org/details/canadiangeograph0000geor

HURON COUNTY LIBRARY
2 008 238064 1

CANADIAN GEOGRAPHY FOR JUNIORS

By courtesy of Department of Immigration and Colonisation, Ottawa.

THE THUNDER OF WATERS: NIAGARA'S CATARACT

From what position was this picture taken? Describe the shapes of the two falls. Which is the Canadian or Horseshoe Falls? What indicates that the water immediately below the American Falls is shallow? What is the dark object in the centre of the river just below the Canadian Falls? From the size of the river above the American and Canadian Falls, which appears to have the greater volume of water? Are there rapids above the falls? What rises from the foot of the falls? How wide is the river below the falls? What difference in the banks of the river is there below and above the falls?

CANADIAN GEOGRAPHY FOR JUNIORS

BY

GEORGE A. CORNISH, B.A.

Professor of Science, University of Toronto
*Author of "*CANADIAN SCHOOL GEOGRAPHY,*" etc.*

WITH 182 SKETCH MAPS,
DIAGRAMS AND ILLUSTRATIONS

1928

TORONTO & LONDON
J. M. DENT & SONS, LTD.

All rights reserved

First Edition . . 1927
Reprinted . . . 1928
Special B.C. Edition 1928

PRINTED IN GREAT BRITAIN

INTRODUCTION

INTEREST, interest, and yet more interest is the keynote to success in teaching junior geography. Yet how little we teachers know about the natural interests of children and how to appeal to them. We sometimes allow others to surpass us. The cross-word puzzle can hold children to their dictionaries for hours at a time, the cartoonist can make them more eager to devour funny pictures than their breakfasts, the newspaper with its illustrated supplement and picture page can enthral them for half-an-hour every day, while we can often only keep them at their books by means of threats, detentions or other coercive measures.

No sooner does some new scheme or invention arise than newspapers, business men, advertisers, railways and governments instantly seize upon it to serve their ends, whether with pictures, puzzles, moving-pictures or radio, while teachers too often continue in the old dull paths.

Suppose you were to announce to your class, as a special incentive to stimulate interest, that to-morrow you would give a geography lesson on the boundaries of Europe, the surface features of British Columbia, the winds of the Atlantic Ocean, the climate of North America, or the coast-waters of Australia. Would there be any violent hand-clapping, vociferous cheering, or vivid sparkling of eyes? No. Your announcement would probably bring a sudden silence. Yet these are the topics on which we usually build our geography lessons.

The present elementary text-book is a protest against such unpedagogical, unpsychological, dry-as-dust methods of presenting geography to children.

In this little book the author has tried to select topics that are naturally interesting, and that will seem worth while to children. Important geographical facts are built up around these centres of interest, because children are much more likely to remember them in such relationships. The old-fashioned method of setting every continent, country and province in the same monotonous groove of position,

extent, boundaries, coast-waters, surface, climate, is cast aside. Topics of many kinds, journeys, products, cities, occupations, natural phenomena, are moulded into problems to be solved, no two of which are similar or treated in the same way. The pupils attack every new problem with a zest and curiosity that compel their interest.

Since variety of treatment sustains interest, the author has endeavoured to introduce as many literary devices as possible, and in no two chapters is the subject matter handled in the same manner. In one chapter a fish tells the story of its life, while in another a heated discussion takes place between an inquisitive boy and his pedagogical father as to the relative importance of a peak and a pass. A trip down a treacherous river, or across the wind belts of the Atlantic Ocean, is followed by a drama of South America. Even imaginary debates are not neglected. Though such literary forms take slightly more space, they add variety and vividness.

The author has not hesitated to use all the justifiable devices of the shrewd editor of a newspaper or the hard-headed business man, in order to compel attention. Certain instincts are strong in children. The advertiser, the newspaper, and the entertainer successfully appeal to these. Why should not the teacher feed these instincts and direct them into useful channels? Is not that one of his chief functions? Children delight in solving puzzles. Therefore the author has not hesitated to teach them geography through puzzles. Picture puzzles, map puzzles, cross-word puzzles, and question puzzles are all found in this book.

What appeal more to a child than clear pictures full of action? Pictures in a text-book, once vividly impressed on young eyes, will still be remembered even in old age. This striking fact has led the author to devote one-half of this book to pictures. They have been selected with the greatest care, and every effort has been made to preserve the beauty and definition of the original prints. The space on the last page of a chapter which usually is left blank, has been filled by information under the fanciful title, " Geographical Pepper and Salt." Just as these two seasonings give taste to the substantial part of a meal, so certain facts, though not the main part of geography, are well worth knowing and stimulate the interest of children. Such facts have been placed under this title, and they are scattered just as irregularly as the pepper and salt on a savoury dish.

This volume with its companion, the *Canadian School Geography*,

contains a complete course for the elementary schools of Canada. While the latter volume should be used in grades seven and eight, the present volume is suitable for grades five and six. The *Canadian School Atlas* should be used with both.

The geography of the same continents, countries and provinces is taught several times in school—first in grades five and six, next in grades seven and eight, and finally in the lower forms of the high school. As a rule the text-books used in the different grades treat continents, countries and provinces in about the same way, with the result that pupils become weary with learning, several times over, facts as to position, surface, drainage, etc.

An attempt has been made in these two books to overcome these defects. The junior text-book does not deal primarily with countries, nor does it attempt to cover the whole field of regional geography. It selects a number of topics, considered interesting to children, from all departments of the subject, and by treating these rather fully, it endeavours to lead the pupil to grasp main geographical relationships, and to fill his mind with concrete pictures of the people, occupations, productions, and natural phenomena of many parts of the world. It tries to arouse his interest in many regions in order that he may be desirous to learn more about them. Then he is introduced to the senior book, where all the countries of the world are treated in order. Hence the first book, instead of taking the edge off his appetite for the second, should rather whet it and make him call eagerly for more.

CONTENTS

CHAPTER I

PAGE

THE CANADIAN TRAPPER 1

CHAPTER II

CANADA'S ICE AGE 13

CHAPTER III

THE LIFE OF MRS. SOCKEYE SALMON 22

CHAPTER IV

THE BIG TREES OF BRITISH COLUMBIA. 33

CHAPTER V

CANADA'S STREAM OF GOLD 43

CHAPTER VI

A TRIP DOWN THE FRASER RIVER 56

CHAPTER VII

THE THROAT OF THE ROCKIES 68

CHAPTER VIII

THREE VISITS TO A RUSSIAN PEASANT. 79

CHAPTER IX

WHICH IS GOING TO BE LARGER, TORONTO OR WINNIPEG? 95

CHAPTER X

FIRE! FIRE! FIRE! 108

CHAPTER XI

THE WORLD'S LAST GREAT SAILORS 124

CHAPTER XII

PAGE

ACROSS THE UNITED STATES BY AEROPLANE 139

CHAPTER XIII

THE FIGHTING FAMILY 163

CHAPTER XIV

A SHORT CATECHISM ON EUROPE 180

CHAPTER XV

ASIA, THE CONTINENT OF GIANTS 202

CHAPTER XVI

AFRICA, THE CAKE-LIKE CONTINENT 222

CHAPTER XVII

TALES OF JOHN BULL'S FAMILY 242

CHAPTER XVIII

CALENDAR OF THE BRITISH EMPIRE 285

INDEX 299

LIST OF ILLUSTRATIONS

FIG.		PAGE
	The thunder of waters: Niagara's cataract . . . *Frontispiece*	
1.	Where the world gets its furs .	3
2.	Young gamblers: a study in hats .	4
3.	Policemen in Northern Canada .	4
4.	Simple life on the border of Hudson Bay	7
5.	Eskimos in kayaks on Hudson Bay	7
6.	An Indian trap for catching martens and other small animals .	8
7.	A snare for catching rabbits . .	8
8.	Portaging at Fort Smith . .	11
9.	An exciting ride	11
10.	A pretty little nursemaid from the Yukon	12
11.	The gem of the Rockies: Lake Louise	15
12.	A rock in a dreary land . .	16
13.	Northern Canada's mosaic of silver and green	19
14.	A ridge formed under the ice-sheet	20
15.	A good catch	23
16.	Where salmon by the million are canned	24
17.	Spring, sockeye, coho, and humpback	27
18.	Salmon-fishing at the mouth of the Fraser River . . .	28
19.	Canneries line the Skeena River .	31
20.	A ladder for salmon to climb a waterfall	31
21.	Indians on a branch of the Skeena River hooking salmon . .	32
22.	A wickerwork trap for catching salmon	32
23.	A job that requires a cool head .	35
24.	Lifting ten-ton logs on to cars .	36
25.	The death of the giant . . .	39
26.	British Columbia lumber in every continent	40
27.	The prospector for gold . .	45
28.	Dredging for gold in the North .	46
29.	Dumping the waste . . .	49
30.	The greatest gold mine in the world	50
31.	Frank, B.C., towards Crowsnest Pass	53
32.	Smelter at Trail, B.C. . . .	54
33.	Drilling in a mine . . .	57
34.	The source of the world's asbestos .	58
35.	Prince Rupert, the greatest fishing town in British Columbia .	61
36.	The basin of Fraser River . .	62
37.	Licking a salmon can clean . .	65
38.	Rocky-Mountain goat . . .	65
39.	Where prize apples are grown .	66
40.	Two great bridges across the Fraser River	69
41.	The garden of British Columbia .	70
42.	Calgary: the guardian of Kicking Horse Pass	73
43.	Edmonton: the guardian of the Yellowhead Pass . . .	73
44.	Passes through the Rockies . .	74
45.	The grades of transcontinental railways	77
46.	The neck of the bottle: the Yellowhead Pass	78
47.	Where the New Canadians come from	81
48.	A first glimpse of their new home .	82
49.	Bags, boxes, baskets, bundles and valises of new arrivals . .	85
50.	Many immigrants arrive in native costume	86
51.	Canada's Hope	86
52.	The Prince of Wales's ranch in Alberta	89
53.	Elevators line the railways everywhere on the prairies . .	89
54.	Number One, Manitoba Hard .	90
55.	A square mile of gold . . .	90
56.	Where Alberta's laws are made .	93

FIG.		PAGE
57.	Getting on in Alberta	94
58.	The first home of a Russian peasant in Alberta	94
59.	Toronto's skyscrapers	97
60.	The largest university in the British Empire	98
61.	Canada's greatest market-square	98
62.	The spider's web of railways around Toronto	101
63.	The railway feeders of Winnipeg	102
64.	Part of Ottawa	105
65.	The hub of Canada	105
66.	The growth of Toronto and Winnipeg during the last 90 years	106
67.	The hub of the prairies: Winnipeg	109
68.	Licking up the forest	110
69.	The quick and the dead	113
70.	The "alligator"	114
71.	The monarchs of the western forests	114
72.	The lone watcher for fires	117
73.	The front of a forest fire	117
74.	The logging railway	118
75.	Unloading logs from a car	118
76.	Took two hundred years to grow, one hour to destroy	121
77.	A puzzle map of the provinces of Canada	122
78.	The hunter's return	125
79.	The harvest of the sea	126
80.	Canada's codfish in every climate	129
81.	A snug fishing town: Lunenburg	130
82.	A fishing fleet in the Maritime Provinces	133
83.	A fishing schooner starting for the Grand Bank	133
84.	Fishing on the Banks	134
85.	A sailing trip from Lunenburg to Rio de Janeiro	136
86.	Drying the codfish	137
87.	A cross-word puzzle on Canadian geographical names	138
88.	The greatest collection of giant buildings in the world	141
89.	Air view of New Orleans	142
90.	Aerial view of the city of Buffalo	145
91.	Iron ore docks at Duluth	146
92.	From fire to ice	149
93.	The Grand Canyon of the Colorado from the air	149
94.	Mountains of salmon cans	150
95.	A square mile of prunes	150
96.	Threshing rice in Louisiana	153
97.	Wheat passes from field to bag	153
98.	A hydro-electric power plant in the state of Washington	154
99.	Strange rafts of logs in Western United States	157
100.	Columbia River from the air	157
101.	The making of a movie at Hollywood	158
102.	Making the turpentine flow	161
103.	Geysers in Yellowstone Park	162
104.	Yucca trees among desert shrubs	162
105.	Scrambled countries of South America	165
106.	More scrambled countries of South America	166
107.	The Magdalena River	169
108.	One of the highest cities in South America: Quito	169
109.	A typical road through the Andes	170
110.	Pottery market in Bogota	170
111.	A cottage in the tropical forest	173
112.	Natives on the Amazon River	174
113.	A mountain of wheat	177
114.	Sheep, sheep, and more sheep	177
115.	Square miles of grape-vines in Argentina	178
116.	How to find the area of a continent	181
117.	Europe broken to fragments. Can you mend it?	182
118.	The shortest people of Europe: the Laplanders	185
119.	Enjoying the winter in Oslo	185
120.	Timber transformed to *The Times*	186
121.	Sticking his head among the clouds	189
122.	How a beautiful carpet is made	190
123.	A great city of Europe: Prague	193
124.	A church in Norway eight hundred years old	193
125.	Spinning and weaving in the home	194
126.	The year's vintage in Bulgaria	194
127.	All aboard! In every part of the world	197
128.	How the world travels	198
129.	Regions of Asia where rivers dry up	203
130.	The five throats of the world	204
131.	A royal tiger hunt	207
132.	Japan's sacred mountain, Fuji	208

FIG.		PAGE
133.	Japanese at home	208
134.	Transporting bags of rice in Korea	211
135.	Chinese gardeners bring vegetables to market	211
136.	The hum of industry in Port Arthur	212
137.	An Arab beauty	215
138.	An Arab beggar and a stork	215
139.	Where our dates come from	216
140.	All aboard! A ride on an elephant's back	219
141.	A wonderfully carved shrine in Bangkok, Siam	220
142.	Driving a bargain in Java	223
143.	The hidden continent	224
144.	The mystery river of Africa: the Nile	227
145.	Canada and Africa	228
146.	A city with a million inhabitants	231
147.	Fruit market in Zanzibar	232
148.	Good morning! this is a very slippery world!	235
149.	A South African stock farm	235
150.	A freight train in Central Africa	236
151.	Coasting along East Africa	236
152.	A town built of mud	239
153.	An oasis in the desert of Morocco	239
154.	High-speed ploughing in North Africa	240
155.	Acres of cloves	243
156.	Teaching school in North Africa	244
157.	Fat sheep ready for market	247
158.	A pest made profitable	248
159.	Where the shine on the kettle comes from	251
160.	Auto tires from a rubber-tree	251
161.	Ploughing on a large scale	252
162.	A house built like a basket	255
163.	A house like a beehive	255
164.	Gold is taken from the rock	256
165.	Where the Easter lilies bloom	259
166.	A study in yellow, green and black	260
167.	Having a bath in South Africa	263
168.	Making cotton cloth in British West Africa	264
169.	A study in black and white in Rhodesia	267
170.	Husking coco-nuts in Zanzibar	267
171.	Mahogany logs in West Africa	268
172.	Coming to town in Madras	271
173.	Making pottery in India	271
174.	Watering the land in India	272
175.	"Heads" of lettuce in Bagdad	272
176.	A sea of wool	275
177.	Travelling in the Australian scrub	276
178.	Picture puzzle of the British Empire	279
179.	A great country in a maze	280
180.	A picture puzzle of the manufactures of Great Britain and Ireland	283
181.	A Garden of Eden	284

CANADIAN GEOGRAPHY FOR JUNIORS

CHAPTER I

THE CANADIAN TRAPPER

THE STORY OF THE HUDSON'S BAY COMPANY

In this section we shall study fur. Examine a piece of fur and describe the two kinds of hairs on it. How do they differ from each other? Examine the coats of a dog, cat, horse, cow, and sheep to find if they have two kinds of hairs. Write the names of as many kinds of fur as possible, describing each as to colour, texture, length of hairs, value, and uses. Find from what animal each is obtained and look up in an encyclopædia a description of each animal. What furs are used to make men's and women's coats and linings for coats? Name three of the most expensive furs, three of the cheapest furs, and three white furs. What fur is used in the coronation robes of kings? When a lawyer becomes a judge, why is he said to "don the ermine"?

The fur country. Would you believe that for two hundred and fifty years a trading company has ruled over a region almost half as large as the United States and larger than any country in Europe, and that the empire over which the company holds sway is in Northern Canada? This Hudson's Bay Company controls the vast region bordered on the east by the Atlantic, on the west by the Pacific, on the north by the Arctic Ocean, and stretching south to the northern fringe of the settled area of our country. Its small army of brave men, no matter how acute the danger, never once retreated in two hundred years. But through all these generations their lives were one long struggle with cold, starvation and death, though their determination and silent, lonely work, has made the north a region of which to be proud.

The kingdom of the Hudson's Bay Company is almost cut in two by that great cold, inland sea which gives the Company its name. To the east of this bay lies bleak Ungava, high and rocky, the greater part of whose trackless wilderness is as unknown to the white man as is the centre of the earth. The region west of Hudson Bay can be divided into three strips running north and south. The land bordering on Hudson Bay is as rocky and lake-bespangled as Ungava to the east. Its northern part, because it is treeless, was formerly called the "Barren Lands," but recently has been more correctly named the *Northern Plain*. The central strip is a wooded plain drained by that greatest of northern

waterways, the Mackenzie River. The western strip is a rough plateau, bristling with snow-capped peaks, folded ridges, and yawning canyons. It extends from the Rocky Mountains to the Pacific Ocean.

The people of the north. As stars shed their light from night's dark sky, so for two hundred and fifty years have the little lonely Hudson's Bay posts, scattered thinly over the northern wilderness, stood for justice and civilisation. One stands guard at the mouth of every river which is well situated for trade.

The short, alert Eskimos (Figs. 2, 5) live in the bleakest parts of Northern Canada fringing the Arctic Ocean, in the greater part of Hudson Bay, and on the coast of Labrador on the Atlantic Ocean. Red Indians, half-breeds and adventurous white men live farther south. All make their living by hunting and trapping the fur-bearing animals, whose skins they exchange to the Hudson's Bay and other companies for guns, powder, shot, clothes, sugar, tobacco, traps, and everything else that they require for their simple life.

Travelling in the north. This broad region is one great network of rivers and lakes. The Mackenzie and its many tributaries act as a vast artery carrying the life-blood of trade throughout the central strip of land. A hundred rivers, like spokes in a wheel, carry furs down to Hudson Bay. Much of the land lying between the rivers is formed of undrained hollows in the rock, in which for thousands of years moss has grown, layer upon layer, until the hollows have become quaking masses of decayed vegetation. Man attempts to cross these *muskegs* at his peril.

The birch-bark canoe makes summer travelling possible. The skilful Indian strips the bark from the tree, shapes it around ribs of wood, and leaves it in the sun to dry and stiffen. In a few days he has a boat so light that it can be carried on his head around a waterfall or from the head-waters of one river to those of another. Yet it is strong enough to carry his year's catch of furs as well as his family down to the Hudson's Bay post.

In this northern region ice begins to form on the smaller lakes in October, and snow covers the ground. By late November all but the very largest lakes are covered with thick ice, and for six, seven, or eight months of the year the trapper's world is a white wilderness of snow. Then snow-shoes and dog-trains will carry travellers over this bleak area, for in few parts are the forests too dense to be penetrated, and seldom is the country too rough to be crossed.

FIG. 1. WHERE THE WORLD GETS ITS FURS

In what cold and in what warm countries is hunting the chief occupation? In which are the most fur-producing animals found? What furs are obtained in Canada and in Siberia? What two countries produce opossum? Where is chinchilla found? Which of the furs named in the map is got from a domestic animal? Name four animals that produce white fur. Seal, sable, silver and black fox, ermine, chinchilla, and sea-otter are called the precious furs. Where is each obtained?

By courtesy of the Hudson's Bay Company.

FIG. 2. YOUNG GAMBLERS—A STUDY IN HATS

Seven Eskimo boys at Fort Rae, Great Slave Lake, gambling with buttons. Notice their dark complexion and long, coarse black hair. Find Great Slave Lake in your map.

By courtesy of Canadian Pacific Railway.

FIG. 3. POLICEMEN IN NORTHERN CANADA

Describe the sleigh. How many dogs draw each sleigh? Describe the harness. What is the size and colour of the dogs? How do the men travel? Of what is their shack built? Which room is kept warmer? What is probably used for fuel? Which man is not a policeman? Why do you think so? What are the duties of policemen in the Hudson Bay district?

The trapper. The Indian, Eskimo, and half-breed, in this white wilderness of the north, make their living by outwitting the wild animals. Let us accompany a trapper on one of his hard journeys to visit his traps. His home is a miserable log shack containing a single room, in which is a stove, a table, a bench, but little else. On the log walls hang some raw furs with the skin turned outwards. His ever-hungry dogs—quarrelsome brutes—are ready to snap at anything that comes in their way. His nearest neighbour is fifty miles farther up the stream, and the Hudson's Bay post at which he trades is over two hundred miles farther down. His life is so lonely that it is no wonder that sometimes the solitude drives him mad.

It takes a fortnight to go to the end of his line of traps and return, so he takes a good supply of coffee and tobacco, chief solace of the lonesome wild, but depends for most of his food on what he can shoot and trap during the journey.

It is late October, and ice has formed on lakes and streams but is not yet thick. The first part of his journey is across a marsh, billowy with dome-shaped masses of rushes, and huddled close together in the space below each dome is a family of musk-rats. Stealthily crossing the ice in the moonlight, he approaches these one by one, and a cruel stab with a pointed spear deep into the mass of unfrozen rushes usually brings him one or two victims as reward. Over thirty are taken during the evening, and thirty musk-rat homes are torn to pieces at a season when the ice makes repair very difficult. Since the hated wolverine and fierce wolf are sure to devour any animals left exposed, the trapper hides his catch under the ice near the shore. They are soon covered with a hard layer, so thick that not even a wolverine can dig them out. As this method of catching rats is illegal and very injurious to the skins, it is fortunately disappearing and being replaced by the use of traps.

That night, and every night, he sleeps rolled up in his blankets with his feet towards a roaring fire, fragrant spruce-boughs for a bed, and the dark sky for his only roof.

Next morning he has not gone far when he suddenly stops and begins to search carefully in the snow. At last he lifts up a very small trap, and from it takes a dainty little ermine, with fur rivalling the pure snow in whiteness. At this point in his former trip he had seen little marks on the snow like the dots and dashes of telegraphic letters. He knew at once that they were the tracks of a young ermine with a

fur delicate and white, fit for the robe of a king. As no ordinary trap or snare dare touch its dainty body for fear of marring its purity, he had set a trap without teeth in its jaws, and had thus secured his victim.

On this day he walks twenty miles through the gloomy pine forest examining his marten traps. These are of two kinds, the death-fall and the steel trap. In the first, which is home-made, the nibbling of the bait causes a roof of logs to fall and kill the little victim. The steel trap has a pair of jaws kept open by a trigger, and when the trigger is touched these jaws snap with a stiff spring. The trap is chained to a stake or small tree. Over fifty are set along the first ten miles of the trapper's march through the scattered woods. The first which he visits has a marten by the hind foot, the next two are untouched, the next has been set off by a squirrel, then a whole row has been robbed of its bait by the gluttonous wolverine. In all he gets ten martens and two minks from the fifty traps.

Each trap is reset with the greatest care, the smell of the victim and the human smell are removed either by smoking or rubbing with the skin of an animal; they are then covered with a thin layer of snow, and last of all, as the man leaves the trap, snow is sprinkled over his footmarks.

Suddenly in his lonely march he stops, looking closely at some marks in the snow. He knows in an instant by the fresh tracks that a lynx has recently passed. He drops his load all but the gun and follows the tracks at full speed, for as the animal scrambles slowly and awkwardly through the deep snow he hopes to overtake it. In less than half an hour he comes up with his prey, crouching in the fork of a tree and hissing through its glistening teeth. One shot lays it low. The trapper has not only valuable fur, but also several good meals from its flesh.

At the end of a fortnight the trapper is back in his cabin, well-laden with his catch. Week after week, and year after year, this brave, lonely man faces the dreary wastes of Northern Canada, tramps through the drifting snow of the blizzard, works through the dark days of winter, when the sun is only above the horizon for three hours, sleeps in the open air with the thermometer at forty or fifty degrees below zero, and with the howling of a pack of hungry wolves for a lullaby. That is how our furs are got.

The trapper's holiday. When the spring arrives, the trapper prepares to carry his furs to the Hudson's Bay post, two hundred

By courtesy of Canadian Pacific Railway.

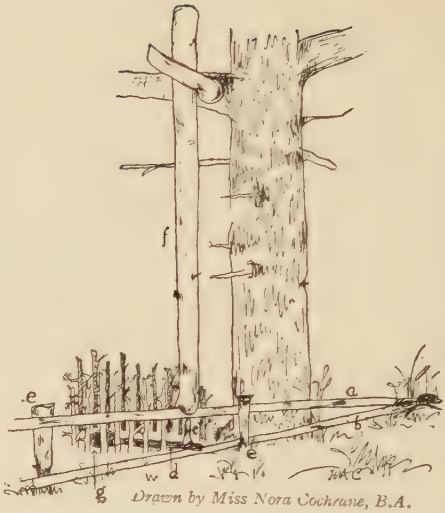
FIG. 4. SIMPLE LIFE ON THE BORDER OF HUDSON BAY

Describe the trapper's house. Of what is it made? Why are poles put outside as well as inside? Of what is the canoe made? How does it differ in shape from a canoe in Southern Canada? Find the dog. Are there trees along the river?

By courtesy of Canadian Pacific Railway.

FIG. 5. ESKIMOS IN KAYAKS ON HUDSON BAY

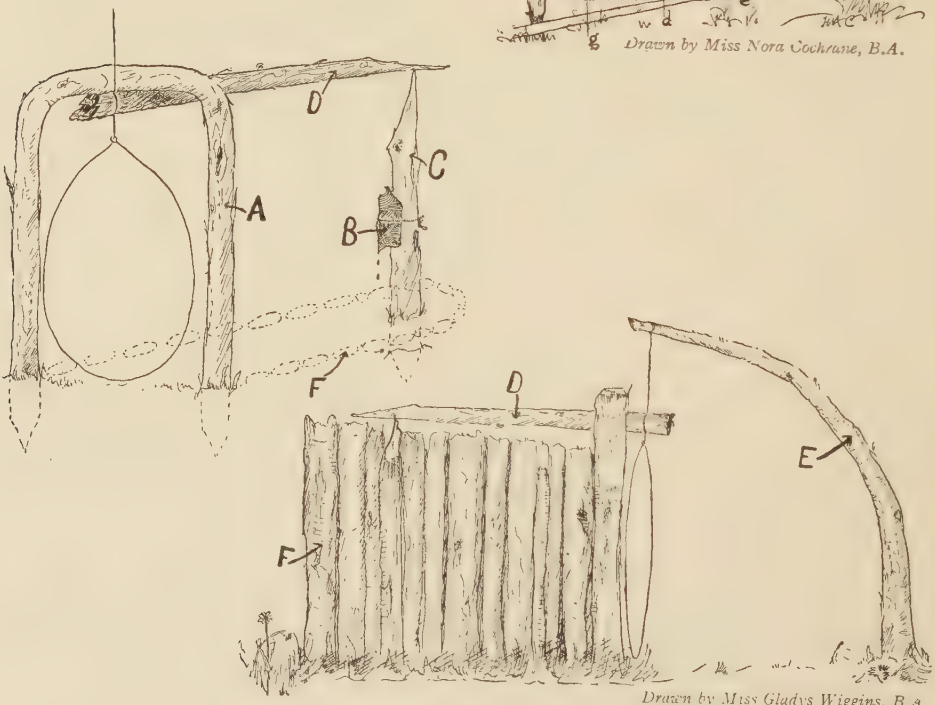
How do these boats differ from ours? They are made of sealskin stretched over a frame. Describe the paddle. As the man's skirt is fastened tightly to the rim of the opening it cannot ship any water. Even when a kayak turns over with a man fastened in he can right it again. How long and wide are these boats? What has the boatman learned from white men?



Drawn by Miss Nora Cochrane, B.A.

FIG. 6. AN INDIAN TRAP FOR CATCHING MARTENS AND OTHER SMALL ANIMALS

The sticks *a* and *b* are kept in place by the uprights *e*, *e*. *b* lies on the ground; one end of *a* is so buried in the ground that it lies flat along *b*. The free end of *a* is raised and kept in position by the little stick *c*, which rests delicately on the bait-stick *d*. The bait *g* is surrounded on three sides by stakes driven in the ground and can only be reached by passing between *a* and *b*. As the animal eats the bait, the bait-stick *d* is moved, the piece *c* falls out, *a* comes down on the animal, and the heavy log *f* pressing down prevents it from escaping.



Drawn by Miss Gladys Wiggins, B.A.

FIG. 7. A SNARE FOR CATCHING RABBITS

A is an elastic switch two and one-half feet long, pointed at each end and stuck in the ground to make an arch. The bait *B* is attached to *C*, one end of which rests on the ground, and the other delicately supports *D*. The other end of *D* is attached to the wire above the loop. The wire is attached to a trimmed sapling *E* bent over. As the bent sapling pulls on the wire it presses one end of *D* against the arch, which makes the other end press against *C*. This is all enclosed by a little fence *F*, made of stakes driven in the ground, so that the only entrance is through the arch. If a rabbit had its body through the loop and began nibbling the bait, describe how it would be caught.

miles away, and to get his winter's supplies. The furs are packed in bales of eighty pounds, in order that they may be carried over the portages. By July the river is sufficiently free of ice for him to make a start, and the trapper's heart is glad, for he is going to reap the reward of his labour, and best of all he is going to see his fellow-men. What cares he for that two hundred miles he must paddle a heavily-laden canoe, sometimes against a swift current? Often working against the seething torrent, waist-deep in the icy waters, he tows his load along. At least a dozen times his whole cargo and canoe have to be carried on his back along a rough trail through the forest in order to avoid waterfalls or swift rapids.

At last the trading-post is reached. Many Indians with their families have arrived already, and their deer-skin tepees almost encircle the post, which consists of the different buildings of the Hudson's Bay Company—buildings made chiefly of lumber cut from the neighbouring forest. Down near the river are well-cultivated fields, where potatoes, cabbages, turnips and other vegetables for the winter are grown, while a field of oats supplies fodder for the stock. The long store where the trading takes place is the great attraction for all eyes. Its shelves are well packed with those articles which Indians and other trappers require: tobacco, powder, shot, strong cloth of bright colours to satisfy the vanity of the squaws, sugar, flour, guns, axes, knives, traps, scissors, needles, matches, and ornaments such as ribbons and beads.

Each Indian brings in his furs, which the clerk values in terms of a beaver skin, for there is no money in the north. Then a long process of bargaining begins, for the Indian wants twice as much as his furs will buy. Hour after hour passes, the Indian often changes his mind, but the clerk does not lose patience. At last all disputes about prices are settled, and the Indian and his squaw pass proudly out, laden with their year's supplies and ready to travel back two hundred miles to their winter camping-ground.

The greatness of the Hudson's Bay Company. The Hudson's Bay Company has been a marvel of fair dealing. Their goods are always of the most serviceable quality, and in two hundred and fifty years they have never broken faith with the Indians. If an Indian has had no success in trapping, he knows that he can get his next year's outfit on credit from the Company. The Company trusts the Indian and the Indian has faith in the Company. On the other hand

the head-man at each post, called the Post Manager, is a great power for law, order and justice in his district, and every bad man feels the weight of his hand.

The Company has used Hudson Bay and all the waterways of the north to bring in its goods and to ship its furs to England. Great creaking two-wheeled ox-carts (Fig. 8), with not a scrap of iron in their make-up, are now being replaced by wagons and automobiles, and the flat-bottomed scows (Fig. 9), pushed by poles and pulled by Indians waist-deep in water, are now being replaced, wherever possible, by up-to-date steamers, which now make journeys of over twelve hundred miles down the Mackenzie River.

This fine company has not merely kept order, developed trade, and partly civilised the Indians, but its officers have improved navigation, explored many new regions, and are now managing great stores in most of the cities of Western Canada.

The future of the north. Perhaps parts of the million and a half of square miles given over to the fur-trader may some day be used for other purposes. The Northern Plain is anything but barren. The great warmth and continued light of the summer sun, which shines for twenty hours a day, clothes favoured parts of these lands almost magically with a mantle of grass and flowers. Other parts are covered with reindeer-moss, which is good fodder for deer and musk-oxen, which once roamed over this region in great numbers. But since the Eskimos and Indians have learned to use guns, their reckless killing is rapidly destroying the herds, the chief source of food for the people.

Efforts are now being made to tame the musk-ox, to introduce the reindeer from Northern Europe, and to make the northern plains and the Arctic islands great musk-ox and reindeer ranches, which will supply meat, milk, and clothing. Perhaps some day such ranches may make it possible for miners to live in these regions more easily and to develop the great mineral resources which are undoubtedly to be found in Canada's vast northland.

The forests which bound the streams in the valley of the Mackenzie River will supply timber for local use, but not much can ever be shipped south against the strong currents to the prairies. While oats, barley and garden vegetables can be grown in sheltered spots along the Mackenzie River, little farming can ever be carried on to the north of the Prairie Provinces.

By courtesy of F. C. C. Lynch, Director of Natural Resources Intelligence Branch, Dept. of Interior.

FIG. 8. PORTAGING AT FORT SMITH

Of what is the cart built? Describe the cart. What animal is used to draw the load? Are the trees large or small? Is the forest dense? Fort Smith is on the Slave River about half-way between Lake Athabasca and Great Slave Lake.

By courtesy of F. C. C. Lynch, Director of Natural Resources Intelligence Branch, Dept. of Interior.

FIG. 9. AN EXCITING RIDE

These men are shooting the rapids at Fort Smith. Are they going north or south? How wide is the Slave River at this point? Notice the size of the trees. How are goods transported up-stream past this rapid? (See illustration above.) How are the men guiding the boat?

By courtesy of F. C. C. Lynch, Director of Natural Resources Intelligence Branch, Dept. of Interior.

FIG. 10. A PRETTY LITTLE NURSE-MAID FROM THE YUKON

What season is it? Is it a level or hilly country? How is the baby fastened on the nurse's back? Do their clothes differ from those of white children?

CHAPTER II

CANADA'S ICE AGE

A feathery snow-flake. During the next winter storm, examine a few snow-flakes on a piece of black cloth. There each lies like a sparkling gem, regular in shape and as light as thistledown. Are such ghostly nothings capable of exerting any force? Pile one upon another and we shall see. Let the flakes fall hour after hour, and soon man, with all his might, can scarcely struggle through them, the powerful automobile is stalled, and at last the great locomotive puffs and grinds in vain as it lies helpless in a great snow-drift, with a string of cars behind it. Our little feathery snow-flake has conquered man's most massive machine.

That is nature's way of working, not in the whirlwind and the storm, but in quiet ways, so gently and so noiselessly that it is scarcely observed, but yet so steadily that in course of time mountains can be torn down, plains levelled, lakes filled, and rocky coast-lines cut into fantastic shapes.

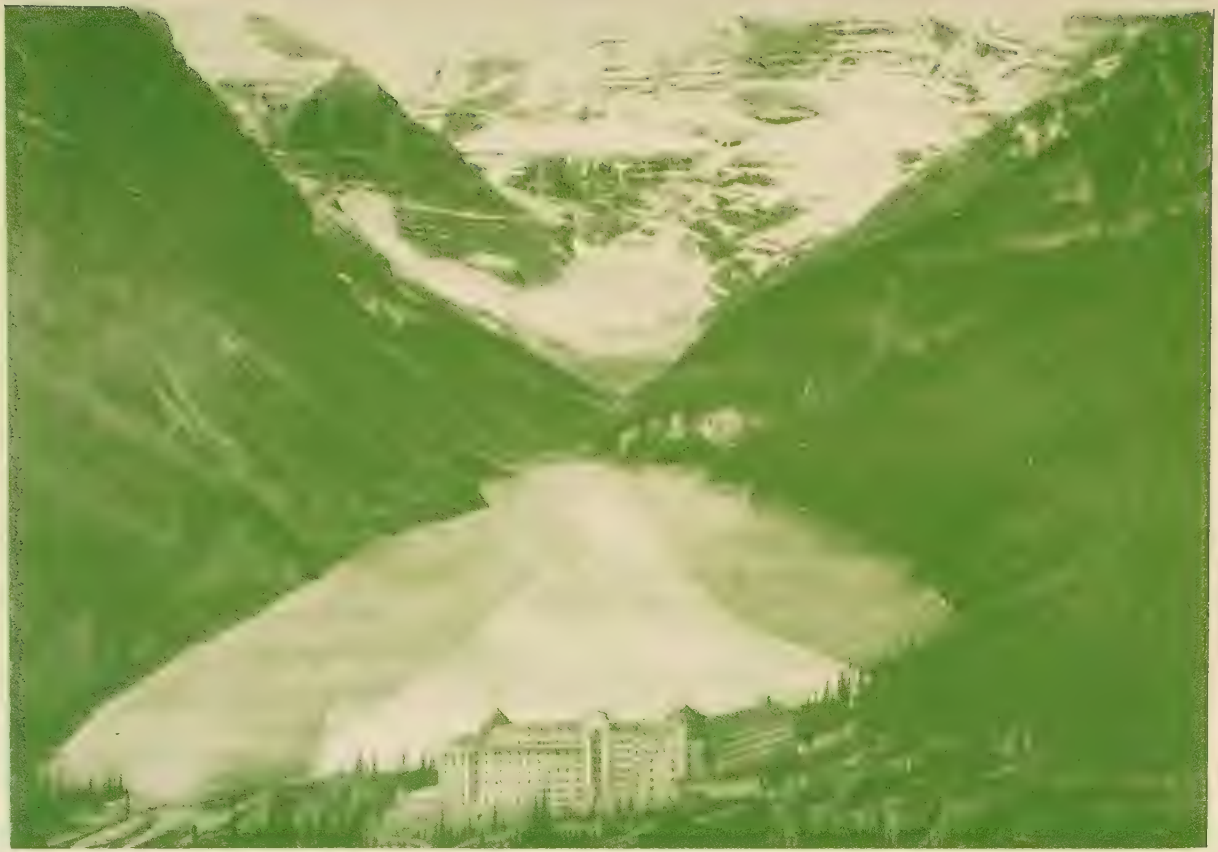
Canada buried in ice. Long, long ago, when the surface of Canada on both sides of Hudson Bay stood up much higher than at present, the weather became colder and colder. Perhaps the rainfall, and especially the snowfall, was then also much heavier than at present. As the weather became colder year by year the increased snowfall disappeared later and later in the spring, and the first snowfall appeared earlier and earlier in the fall. At first the last snow of winter was not melted till the end of May, and the first fall came in September; then the snow clung to the surface till June and began falling again in August. These two periods came closer and closer together till finally the winter's snow had not all melted when the first snow of autumn covered the ground. Next year still more snow would be on the ground when autumn snows began, and thus each year after this, more and more snow would be left unmelted. If only one inch of extra snow fell each year, then in one hundred years the depth would be one hundred inches, and in one thousand years it would be one thousand inches, or over eighty feet.

Something like this happened many thousands of years ago over the greater part of Canada. Labrador Peninsula and the whole region west of Hudson Bay, as well as the mountains of Western Canada, became buried in snow so deep that not a mountain peak, except in the Rockies, was able to push its head above the white mantle.

Ice that flows like water. Roofs and trees break down under the weight of a heavy covering of snow. What happened under the immensely thick snow cap that covered Canada? Just as a snowball, when pressed firmly between the hands, turns into ice, so the great weight above pressed most of the snow cap into ice, clear and blue as an opal. When the wooden covering of a barrel of pitch is cut away, the pitch, even in the coldest weather, will flatten out and flow away in every direction, as though it were a liquid; yet all the time it is as hard and brittle as ice. The ice in the bottom of the Canadian ice-sheet began to do the same. The great heaps both east and west of Hudson Bay began to flatten out, and pushed south over Ontario, Quebec, the Maritime Provinces, and extended even into the United States. They then pushed west and south over the Prairie Provinces, east over Labrador and Newfoundland, and north into Hudson Strait and the Northern Plain of Canada.

Though the heaps of ice were always flattening, fresh snow falling kept them at the same height. As the margin of the heap spread gradually into warmer regions, the ice melted and flowed off as torrents of water. Such conditions continued for thousands of years, and at last the temperature became warmer, not so much snow fell, and melting during the summer was more rapid. The ice-sheet became thinner, the edges gradually retreated backward toward the centres, and finally disappeared. Such an ice-sheet is still to be found covering Greenland thousands of feet deep, except where a few of the highest peaks project as black specks above the thick sheet of snow and ice.

Canada polished smooth by ice. Ice, thousands of feet in thickness, pressed with tremendous force against the rock and soil beneath it. As it spread slowly out it carried along much of the loose soil. Sand, gravel, and stones, frozen in the bottom, as they moved forward were polished, scratched, furrowed, and they broke up the underlying rock. As this giant mill passed over, every pointed hill and crag was gradually rounded off and became a gentle sloping dome, and evidence of this mighty grinding is everywhere seen in Canada. A million square miles is still covered with dome-shaped hills, often called sheep's backs,



By courtesy of the Department of National Defence, Ottawa.

FIG. 11. THE GEM OF THE ROCKIES: LAKE LOUISE

How does the nearest border of the lake differ from the other three borders? Account for this. (Text, page 18.) What is the chief source of water for the lake? What covers the lateral slopes? The farther slope? Account for the difference. What at one time filled the valley now occupied by the lake? (Text, p. 18.) What railway runs near this slope? What is the large building?

By courtesy of Department of Mines, Ottawa.

FIG. 12. A ROCK IN A DREARY LAND

How large is the rock? What is the character of the country? This rock is in Ungava Peninsula and was carried in the ice-sheet, which, when it finally melted, left this large boulder in the position shown

because of their fancied resemblance to the backs of a distant flock of sheep. Wherever rocks have been protected from decay by soil, on its removal scratches and furrows made by ice can be seen as plainly as though they were cut yesterday. In some cases the scratches are as delicate as though made by fine emery-paper, in others furrows a foot deep are gouged from the solid rock, so great was the force of this mighty plough.

Canada's soil carried from north to south. Before the glacial period, as this cold time is called, the northern parts of Canada were probably covered with as thick a layer of soil as the southern. This great mass of ice, slowly but steadily forcing its way towards the south, pushed soil and loose rocks before it, or dragged them under its great weight. In time the hills and even the hollows of the north were scraped clean, and the mixture of clay, sand, gravel and stones was deposited farther south as a mantle of soil. When the ice finally disappeared, it was seen that the fertile plains and alluvial river valleys of Northern Canada had been converted into bare rocks and naked river gorges.

Farms from ice. Let us try to picture what was taking place at the southern margin of the great ice-sheet. Near the edge it was so heavily laden with clay, sand, gravel, and stones, that it was hard to tell whether it was ice or earth. Turbid streams rushed forth full-grown from under the melting mass, and dropped along their shifting channel coarse stones, gravel, and sand in layers, and these to-day are being dug up in many parts of Canada and used to put on roads and road-beds of railways. The ice constantly pushing forward built up around its rim a ridge of clay, sand, gravel, and stones, called *boulder clay*. If the ice margin remained long at one place, this ridge, called a *terminal moraine*, was broad and high. If the margin melted rapidly, only a small amount of boulder clay was built along the front. Thus were produced a succession of irregular hills and hollows. Accordingly to-day we find the southern part of Canada covered with boulder clay, laid down in hills and hollows, and often ridges can be traced for many miles, but usually these hills and hollows are so irregular that they give the country a rolling character.

The ice-sheet thus transported its soil to Southern Canada, but unfortunately much of this was carried from Northern Canada, which thus was left bare and barren. Indeed, still more unfortunately for Canada, much of our good Canadian soil was carried farther south to

make the fertile fields of New York, Ohio, Michigan, and Wisconsin. In most parts the soil deposited from the ice contained stones, which had been broken from the bed rock and then carried many miles (Fig. 12). Many an early settler in Canada spent his life clearing away these stones, which still try the patience of farmers as they plough their land.

Rivers destroyed, lakes created. Before the glacial period the rivers of Canada were very different from what they are to-day. As the ice-sheet spread out, it filled every river and mountain valley, dropping, as it melted, great dams of boulder clay across the river valleys, and especially across the lower ends of mountain valleys (Fig. 11). These held back the water that tore down from the melting ice and which later collected from rainfall, and caused it to gather in pools and lakes. Consequently the whole surface of Canada to-day is dotted with lakes of all sizes and shapes (Fig. 13), and it is said that half of the fresh water of the earth is collected in these countless lakes of Canada. In the mountains of British Columbia they occupy long valleys with frowning rocky slopes on three sides and with a low dam of boulder clay bounding the fourth, over the lip of which the water is drained away (Fig. 11). Such are the beautiful lakes Okanagan (ōk-a-näg′an), Arrow, and Kootenay (kö-tĕ-nā′), as well as numberless little gems showing waters of the purest emerald green, indigo blue, and many shades of red, which attract hundreds of thousands of tourists every summer to the western mountains. In Eastern Canada our Great Lakes, as well as many others, occupy old river valleys, which have been dammed by boulder clay.

The birth of a river. All the old river-courses were more or less filled with the ice-sheet. When it retreated, the water had to find new river channels over the ridged and furrowed surface. Water collected in every hollow, then overflowed at its lowest lip, and tumbling down over the irregular land in rapids and waterfalls reached another hollow, only to fill it and again to overflow. Finally, after a tortuous course, the river reached the sea. The filled hollows were lakes, the connecting streams, often a succession of rapids and waterfalls, became rivers. Such are the rivers in most parts of Canada to-day, and thus were they formed. If one follows a river in Northern Ontario or Quebec it will be found a succession of lakes connected by turbulent and tortuous streams containing rapids and waterfalls. The St. Lawrence is the best example of such a river.

By courtesy of Department of National Defence, Ottawa.

FIG. 13. NORTHERN CANADA'S MOSAIC OF SILVER AND GREEN

This is an aerial picture of part of Lake of the Woods, and shows plainly how the glacier that once covered the country has left myriads of lakes behind. Find two railways, two railway bridges, a dam and two booms of logs in the picture. Describe the character of the surface of the region.

By courtesy of Department of Mines, Ottawa.

FIG. 14. A RIDGE FORMED UNDER THE ICE-SHEET

This ridge of gravel is in Eastern Ontario. It was laid down by a stream flowing under the ice sheet during the glacial period.

Lakes with shores of ice. The ice-sheet after it had retreated from the south, stretched as a dam across the lower St. Lawrence, the rivers flowing into Hudson Bay from the south, the Nelson River, which drains Lake Winnipeg, the Saskatchewan (sas-kach′e-wan), and Red River. With the flow of these rivers to the north cut off, the water collected in great lakes along the southern margin of this great dam of ice. The water rose high enough to overflow to the south. One such lake, due to the damming of the Nelson River and called Agassiz (ag′a-si), occupied much of Southern Manitoba, Saskatchewan, and the adjoining parts of the United States. Another, due to the damming of the rivers flowing into James and Southern Hudson Bay, called Ojibway (ō-jib′wā), occupied Northern Ontario and Quebec. A third, due to the damming of the St. Lawrence River, called Algonquin, was formed by Lakes Superior, Michigan, and Huron joined together. For thousands of years sediment washed down by the rivers settled in the bottoms of these lakes. After the ice-barrier had melted, and the water again drained to the north, these lakes either disappeared or shrank in size, and their old lake bottoms are now plains almost as flat as the sea, and covered with a fat soil many feet deep. To-day these are Canada's most fertile fields. The western prairie is the bed of Lake Agassiz, the Clay Belt in Northern Ontario and Quebec is the bottom of Lake Ojibway, and the most fertile lands of Southern Ontario, and the plains of the St. Lawrence in Quebec, are composed of the sediments of the enlarged Great Lakes and St. Lawrence River.

Canada's surface moulded by ice. Thus we see what wonderful changes the great ice-sheet worked on the surface of our country. Our lakes full of fish, our rivers full of waterfalls so useful for power, our rolling land in the south, our scratched and polished dome-shaped hills in the north, our fertile flat plains occupying old lake bottoms, our beautiful scenic lakes in the mountains, as well as numberless other interesting features too difficult to explain to boys and girls, are all products of the great ice-sheet that buried Canada many, many years ago.

CHAPTER III

THE LIFE OF MRS. SOCKEYE SALMON

THE SALMON FISHERIES OF BRITISH COLUMBIA

How geography can be learned from a salmon can. Let each member of the class examine, or bring to class, as many different labels as possible taken from salmon cans. From these labels find the names of the different kinds of salmon, the colours of the flesh, and the towns in which the salmon is canned. Find these towns on Map 23 in the Atlas, and note on which river each is situated. Is the top of the can soldered on? Are there any holes in the top stopped with solder? By scraping find what covers all parts of the can. Why is this put on? On Map 23 find Lakes Quesnel (kā-nel′) and Babine (ba-bēn′). By what rivers are they drained? How many miles does a salmon, born in one of these lakes, travel in order to reach the sea?

Baby Sockeye. My first name is Sockeye. You may think that I was given this name on account of my eyes, but they had nothing to do with it. In the good old days before the white man came to hunt me to death, the Indian used to call me *sauqui* (sä′-kwē), which meant "best of fish," and the white man changed *sauqui* to "sockeye." My second name is Salmon, one of the most respectable family names in the whole fish kingdom.

I was born in beautiful Lake Babine in central British Columbia, and the first thing that I remember is that I was lying in among the small stones near the shore. I saw thousands of others like myself resting quietly at the bottom. I was then very different in shape from what I am now. A large bladder-like sack, full of food, was attached to the underside of my body, and as this sack grew smaller and smaller I grew larger and larger. When at last it was all gone I felt hungry for the first time in my life and began to search for food.

Those early days were full of danger. Even before some of my brothers and sisters were born, fierce wide-mouthed creatures, called trout, gulped them down by thousands. Many a time I barely escaped from the snap of their jaws. Still I loved the clear, cool water of the broad lake, with its bare, snow-capped mountains on both sides.

My thrilling trip to the sea. When I was a year old I began to feel uneasy and to have a desire to swim away from Lake Babine. I felt a force driving me in the direction in which the water flowed,

By courtesy of Canadian Pacific Railway.

FIG. 15. A GOOD CATCH

Salmon being unloaded at a New Westminster cannery. On to what do they load the salmon when taken from the nets? What is the use of the steamer? How large are the fish? How do the men handle them? Do they appear to be dead or alive? Of what race are the men? Estimate how many fish are on the barge.

By courtesy of Canadian Pacific Railway.

FIG. 16. WHERE SALMON BY THE MILLION ARE CANNED

This cannery is near New Westminster. Name the river shown. (Map 23 in Atlas.) What use is made of the wharf? Describe the boats at the wharf and explain their uses. (See preceding picture.)

never against it. As the current at first was very weak, I moved along slowly, but in time the current increased, and I loved to let it bear me along. Once I happened to come near the surface, and behold! I was no longer in the lake, but in a swift stream, gloomy, with steep rocky banks on each side (Fig. 21). Going down-stream I had the greatest fun of my life. The journey was full of excitement. Now the water flowed quiet and deep, now again it whirled me along so fast that I had to steer carefully with my broad tail lest I be battered against the rocks. Soon I was in a larger river, which the white man calls the Skeena (skē′nä), and this became wider and wider as I swam down-stream. After many days I reached a point where the current slackened, and the banks of the river were very far apart (Fig. 19). As I drew the water over my gills it tasted differently from the water in the lake and river, for it was a little salt. At last there was no land to be seen, the water that flowed over my gills was quite salt, and I knew that I was in the great ocean.

Mrs. Sockeye's blood relations. I have now been in the ocean for a whole year and have seen many wonderful sights and have had many narrow escapes. I have found many of my brothers and sisters, also called Sockeye. But there are three or four relations of mine which are called Salmon but not Sockeye. There is that handsome fellow, Mr. Quinnat or Spring Salmon (Fig. 17). He is the largest and strongest of us all. Though his flesh is generally as red as mine, sometimes, when nobody would suspect it, his flesh turns out to be white. Indeed, occasionally, the flesh on one side of his body is white and on the other red. He prides himself that he is born far away up the mountains in the pure, cold water of the tiny streams from the melting snow and ice, and of course that is something to be proud of. We Sockeyes despise Mr. Coho Salmon (Fig. 17) and Mr. Chum Salmon, for instead of their flesh being a beautiful red like ours it is only pink. The smallest of all my relations which I met in the sea were the Messrs. Humpbacks, who fairly swarmed everywhere, but as they also were only pink and their flesh soft, they could never associate with Mr. Spring and myself.

Deadly traps in the ocean. I am now over three years old and for almost two of these I have been swimming in the sea. My friends say that I am larger, stronger, and handsomer than any other Sockeye of my age. But I have learned to avoid many dangers.

Often in my younger days as I swam my snout struck against a

network of cord hanging vertically in the water (Fig. 18), but my body was so small that it easily passed through the meshes of the net. However, I decided to keep away from all such nets, as I noticed hundreds of my brother Sockeyes drowned in the meshes, for their gill-covers, when caught in the cord, were no longer able to keep the water flowing over the gills. These nets were lifted from time to time, and if my friends who were caught were still alive, they were cruelly struck on the head by a club from a man's hand. They were then tossed into the bottom of a boat. Men called such nets *gill-nets* (Fig. 18). I decided when quite young never to try to get through a net, but always to swim away from it.

Once I had a very narrow escape. I was swimming near the surface with thousands of other Sockeyes, when suddenly I heard a puffing noise and came to the surface. A net was being let out into the water from the back of a boat, which moved in a great circle around us. Before I had time to think, the boat had come close up to me, and I, with thousands of others, was inside the net, as shown by the floats on the surface of the water. No matter in which direction I darted, my snout always struck the hated net, which was getting smaller and smaller, and within which we were becoming so closely packed that we could hardly swim. I dived deep into the water, but found that the net had been drawn together at the bottom. We were now packed so closely that the water was spraying over us. In one last frightened effort I gave a jump into the air, and luckily for me, I found myself outside the net. All the other Sockeyes were caught and lifted into the boat by means of a great dip-net. I often heard men call such a net a *purse-seine*.

One day I saw a very unusual sight, which almost cost me my life. In front of me a bright object gleamed through the water—in fact there were no less than four of these beacons—which flashed like a little fish in the sunshine. Something always compelled me to follow anything that flashed brightly, and I darted forward. As I gained on them, the objects flashed more and more and seemed to be spinning round. Soon I was upon them and snatched at one. Alas, I was caught in the mouth by a sharp hook. I felt myself being drawn forward and upward by the line, which I could plainly see. In spite of the pain I struggled hard, but in vain. As I came near the surface I saw a boat with poles sticking out from each side and two lines from each pole. A man was pulling me in. With every muscle in my body I gave a

By courtesy of United States Fish Commission.

FIG. 17. SPRING, SOCKEYE, COHO AND HUMPBACK

How many fins has each fish on its back? How many on the underside? The average weights of the four kinds are: Spring 22 pounds, Sockeye 5 pounds, Coho 6 pounds, Humpback 4 pounds.

By courtesy of Canadian National Railways.

FIG. 18. SALMON-FISHING AT THE MOUTH OF THE FRASER RIVER

How many boats are on the fishing-grounds and what is their size? How many masts have they? How many men are in each boat? What are the rows of black objects floating on the water? Notice the large white buoys at the ends of each row. Is the land in the distance low or mountainous?

final lurch. The hook ripped through my mouth, but I was free. I had learned my lesson, though with much pain. Although I afterward saw many shining bodies like that first one, and often saw my poor brothers and sisters caught by the hooks of the *trolling-lines*, I never desired again to follow such dangerous flashes.

The cruel fate of my brother Sockeyes. I often wondered what was done with the Sockeyes and Cohoes caught in the purse-seines, the gill-nets, and on the trolling-lines. One day I met an old Sockeye, who was able to tell me all. He had been caught in a purse-seine and after many adventures escaped. He told me that he was thrown from the boat with thousands of others into a scow (Fig. 15) and rapidly towed to a building called a *cannery* (Fig. 16), which was built over the water. A Chinaman, by means of a fork, pitched the fish on to a sloping platform, along which cross-pieces sliding upward pushed them forward and dumped them on the floor. The old Sockeye, trembling yet at the thought of what he had escaped, told me that as he lay there waiting for his turn, he saw his companions pitched one by one into a big iron machine, which scraped off the scales, cut off the fins and head, split open the body, and took out the insides all at the same time. The fish, as it came out of the machine, was cleaned with a spray of water and carried up until it was just below a row of sharp knives which came down and cut it into pieces all of the same length. Another machine rammed these pieces into round tin cans. The cans were then moved into another room where tops were soldered on. Then he saw a sight that made him shudder even yet when he thought of it, though he knew that all his companions were dead before they had been packed in the cans. A car, loaded with hundreds of the sealed cans, was wheeled into a metal oven and the door closed. Then scalding-hot steam was passed into the oven for more than an hour. Now the cans of salmon were ready to be labelled, packed in boxes, and shipped to all parts of the world.

Mrs. Sockeye longs for her birthplace. After hearing the story of the terrible fate of my friends, I became more cautious than ever. Day and night I was always alert to avoid the sly traps set by man.

I had now been in the sea for about three years and had passed through many dangers. But still I was happy in the free life and thought I should never wish to leave the blue, salt water. But I was mistaken. A strange longing to go back up the river, whence I had entered the sea, took possession of me. But how could I find it? Following my

strong impulse to swim to fresher water, I soon found myself battling once more against the currents of the Skeena River. My whole nature seemed to change. I had no desire to eat, but only to push at full speed up-stream, and I rushed through the seething torrents with ease, and I even leaped up waterfalls of some height (Fig. 20). As though I had not enough trouble in overcoming the current, my old enemy—man—was ever lying in wait for me. If I hugged the shore to avoid the swift current, there he stood on a platform with a spear or a net in his hand ready to pierce me through or scoop me up (Fig. 21). If the river narrowed, he set many kinds of traps (Fig. 22), but in my eagerness to get back to my birthplace I avoided every attempt on my life.

At last I was back in the great lake near my birthplace. I sought out a shallow spot, where my mate had scooped out a hollow in the gravel for a nest, and here I laid thousands of eggs and covered them with sand and fine stones.

Now I felt that my life was done. My body was bruised and bleeding, my flesh, formerly so plump and firm, was now thin and flabby; I had no desire to eat or swim, not even to live, but just allowed the current to carry me wherever it would.

. . . . . .

The next morning there was found floating on the surface the body of the largest Sockeye salmon ever seen along the course of the Skeena River.

GEOGRAPHICAL PEPPER AND SALT

The Trent River is the longest in Southern Ontario and the Albany in Northern Ontario.

The people live closer together in Prince Edward Island than in any other province and live farthest apart in British Columbia.

California grows and dries as many raisins as all the rest of the world, but Greece exports the most.

The greatest flocks of sheep are in Australia.

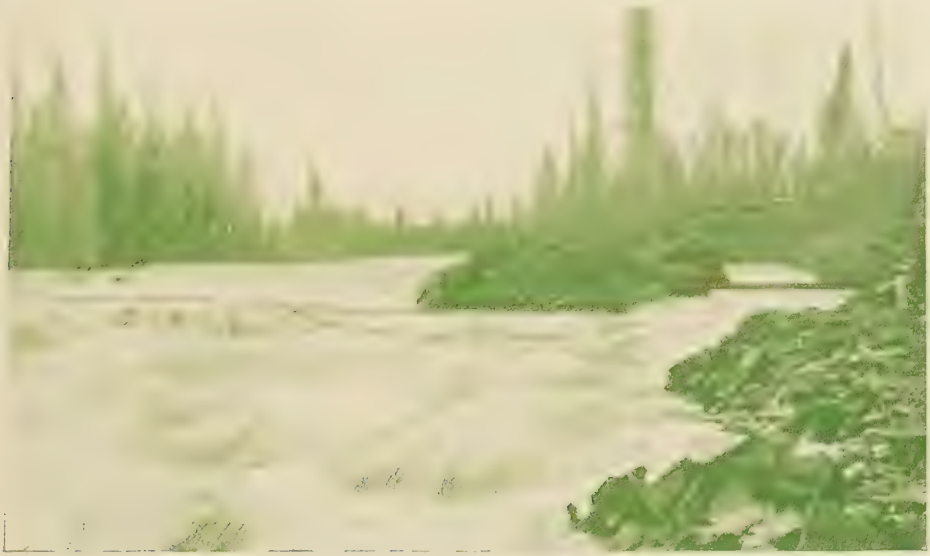
Three out of every four yards of linen cloth come from Russian flax.

A steamship could sail forty thousand miles in the rivers of Brazil, which leads the world in navigable waterways.

By courtesy of Canadian National Railways.

FIG. 19. CANNERIES LINE THE SKEENA RIVER

What is the character of the land along the river? How many canneries can you count? How far apart are they? Describe the buildings. Why are they built on the shore of the river? Why is there a wharf along the side of each? Of the two nearest buildings one is the cannery, the other the houses in which the Chinese and Indians and their families live. In which do the people live?



By courtesy of British Columbia Fisheries Department.

FIG. 20. A LADDER FOR SALMON TO CLIMB A WATERFALL

At the head of this river is a lake in which the salmon lay their eggs. Notice the waterfall at the left. Since salmon cannot readily jump this fall, many were unable to reach the lake until the canal on the right was made, in which there is a series of small falls up which the fish are able to leap.

By courtesy of Canadian National Railways.

FIG. 21. INDIANS ON A BRANCH OF THE SKEENA RIVER HOOKING SALMON

Describe the banks of the river. How are the platforms attached? How are the fish caught? What is the use of the club in the Indian's right-hand? What kind of current has the river? Why do salmon swim close to the shore in such a current?

By courtesy of Canadian National Railways.

FIG. 22. A WICKERWORK TRAP FOR CATCHING SALMON

As used on a branch of the Skeena River. It has a tunnel-shaped opening through which it is easy to enter but almost impossible to escape.

CHAPTER IV

THE BIG TREES OF BRITISH COLUMBIA

PROJECTS

Why do trees grow so big in British Columbia? What three things are most needed for the rapid growth of plants? How many inches of rain fall on the coastal region of British Columbia? (Map 16 in Atlas.) How many inches fall on the northern corner of Vancouver Island? Does more rain fall anywhere in the world between 40 and 60 degrees of latitude than on the coast of British Columbia? (Maps 30, 37, 49 in Atlas.) Does heavy rainfall cause rapid growth of trees? In what other part of British Columbia besides the coast is there heavy rainfall? (Map 16 in Atlas.) In what parts is the rainfall light? Name the parts of the province in which the rainfall is sufficient to cause the rapid growth of trees. What is the temperature of the greater part of British Columbia during July? (Map 15 in Atlas.) During January? (Map 14 in Atlas.) Is there any other part of Canada warmer during the winter than the coast of British Columbia? Does the temperature of the coast of British Columbia stimulate rapid growth of trees? Which has more sunlight during the summer months, Southern British Columbia or Southern Ontario and Quebec? Does sunlight promote growth? Name three reasons why there are dense forests of very large trees on the coast of British Columbia.

How are the logs from the big trees got to the mills? What parts of British Columbia are covered with forests? (Map 9 in Atlas.) From your previous study state in which parts of the province the densest forests are found. Describe the coast-line of British Columbia. (Map 23 in Atlas.) What is the shape of the inlets? By what names are they called? How are they useful in getting out the logs? What is the most marked difference between the surface of British Columbia and that of the other provinces of Canada? (Maps 18 and 23 in Atlas.) Does the surface of British Columbia make it difficult or easy to get out logs? Are the rivers of British Columbia rapid or slow? (Fig. 20.) Have they rapids and waterfalls? Give reasons for your answer. Are such rivers the best for floating logs to the mills? Is the snowfall as heavy on the Pacific as on the Atlantic coast of Canada? Why? How is deep snow helpful in getting out logs? What makes it (*a*) easy, (*b*) difficult, to carry on lumbering in British Columbia?

A maze of coast waters. Nowhere else in the Western Hemisphere is found such a network of inlets as on the coast of British Columbia and Alaska. Behind a barrier of numberless islands, long, narrow bays, called canals, channels, or inlets, worm their way from fifty to one hundred miles into the Coast Mountains. Often they divide into two or three branches, like the narrow toes of a bird's foot. The dense forest, in different shades of sombre green, mantles the sloping borders right from the water's edge.

As the rocky islands along the coast form a breakwater to beat

back the waves of the Pacific, and as many of the inlets are narrow —only two or three miles wide—the winds cannot greatly roughen their waters, and these inlets form ideal channels in which to raft the logs which are cut from the trees on the mountain-slopes.

Four monarchs of the forest. The forests extending along the Pacific coast as far as the north end of Vancouver Island are the most valuable in the world. Not only are the trees giants (Fig. 71), but their trunks stand so erect and so close together that sometimes they resemble a field of wheat. Amongst all the trees the Douglas fir is king. Its stem, four to ten feet across, sometimes extends two hundred feet into the air, erect as a mast. Some giants stand over three hundred feet high, and are so broad that an arch could be cut through the base wide enough to admit an automobile, and so old that they were already large when Jacques Cartier sailed up the St. Lawrence. Wherever large, strong timber is required, as in bridges, wharves, and masts, Douglas fir is used. It is just as useful for the finest trimmings, so ornamental is its grain and so beautiful its polish.

One of the most striking scenes for a visitor to the Pacific coast in earlier days was the sight of many Indians gliding through the sea in an immense dug-out canoe, fifty or sixty feet long and eight feet wide. These boats were carved from the trunks of the western red cedar. This tree rivals the Douglas fir in girth though not in height, as it tapers rapidly towards the top. So straight is its grain and so even its texture that a few blows of an axe may split the trunk into rough boards. These were used by early settlers to build their dwellings and are, to this day, employed for roofing cabins. This fir is so resistant to decay that logs that have lain for several hundred years in the dampness of the shady forest are still firm at the centre and some day will be cut into lumber. It is no wonder, therefore, that it is used for making shingles more widely than any other Canadian wood and also for building small boats and launches.

The giant Sitka spruce fringes the Pacific coast of Northern British Columbia and follows the borders of the inlets and river valleys, but does not extend up their slopes to a great height. It is found at its best on Queen Charlotte Islands. It is almost as large as the Douglas fir and is used chiefly in the pulp-mills. Its lightness, strength, and evenness of grain set the whole world clamouring for it during the Great War that it might make the frames of aeroplanes.

The western hemlock is also a very valuable timber tree, but it has

By courtesy of Publicity Bureau, Vancouver, B.C.

FIG. 23. A JOB THAT REQUIRES A COOL HEAD

Notice the man near the top of the tree. He started at the bottom and trimmed off all the branches. He is just cutting off the top, which has begun to fall. A pulley will be attached to the upper end and will be used for dragging the cut logs through the forest down to the railway as shown in next picture.

By courtesy of F. C. C. Lynch, Director, Natural Resources Intelligence Branch, Department of Interior.

FIG. 24. LIFTING TEN-TON LOGS ON TO CARS

The upright is a tree-trunk trimmed as shown in the preceding figure. How is the log lifted? Describe the car on to which it is being loaded. The engine used to hoist it is called a donkey-engine. How many donkey-engines are shown in the picture?

suffered by having the same name as the inferior eastern hemlock. However, its fine qualities are becoming rapidly known.

The rain and sunshine that quicken the trees. Trees, like most other plants, grow rapidly when they have sunshine, warmth, rain, and good soil. The warm, moist, westerly winds, blowing in from the Pacific Ocean, bring a genial temperature to the coastal region during both summer and winter. As these winds blow up the sides of the Coast Mountains facing the ocean, they cause heavier rains than fall in any other part of Canada. The mild weather, the abundant rain, and the long daily period of sunshine during the summer, stir the trees to rapid growth, and it is no wonder that here are found the noblest forests in the world. The Interior Plateau, which is cut off from the Pacific winds by the crest of the Coast Mountains, has very dry weather, and cold winters in many parts. Here the forest trees are smaller and more scattered. Still farther east under the shadow of the giant Rockies, which force the rainfall from the ascending air currents, the valleys of the Upper Fraser and Columbia Rivers are mantled with rich forests.

Logging. To cut trees four and five feet in diameter, and to move them down steep slopes, over rocky crests, and across deep valleys to the sea, is no easy task. Since the rivers in many places are seething torrents and flow through deep, dark gorges, they are not so useful for floating logs as are the rivers of Eastern Canada. Nor along the coast of British Columbia are there the heavy snows which are so useful in Eastern Canada for moving the logs from the woods to the water's edge. Everywhere the logging railway plays the chief part in transport of the logs (Figs. 24, 74, 75). When a new limit is to be stripped of its timber, a rough-and-ready railway is laid from the sea to a central part of the limit. By axe and saw the trees are felled (Fig. 25), the branches cut off, and the trunk cut into logs from twenty-four to forty feet long.

These logs, which are often five feet in diameter and weigh ten or fifteen tons, have to be moved from where they fall to a railway, a river, or an inlet of the sea. Formerly from ten to twenty oxen were used to drag the logs along a rough road cut through the forest. But these animals have long since been replaced by donkey-engines (Fig. 24), rigidly placed on the ground, which pull the logs by means of wire cables wound on cylindrical drums. Usually the logs are dragged along the ground by means of a cable, one end of which is attached

by a pulley to the top of a high tree (Fig. 24), but sometimes they are suspended from a wire cable that extends from the railway in the valley to a suitable point on the slope. This wire cable, as thick as the wrist, is stretched between two high spars, made by trimming the branches from very large trees (Fig. 23). One or more logs at a time hanging from wheels, which roll along the cable, are moved from where they fall to the railway.

Often a *chute* made of logs is laid down a slope, and the logs slide, or are drawn, on this pathway to the railway. Occasionally a great water-tight sloping trough is erected, and water from a mountain stream is turned into this new channel, called a *flume*. The logs float or slide down this trough. One flume in the Sierra Nevadas, in California, is over fifty miles long.

The logs are brought by the railway to the sea, where they are bound together into rafts and towed by boats to the saw-mills (Fig. 99).

Making of lumber, shingles, and pulp. The many saw-mills of the Pacific coast are the largest in the world. Hour after hour and day after day, a steady stream of logs is drawn up into one end of the mill, and a continuous line of lumber passes out at the other, to be piled in the great lumber yards to dry, or to be loaded on to cars or steamers for shipment to every corner of the world (Fig. 26). Over three hundred such mills are strung along the coast and the rivers, but the largest and most numerous are near the city of Vancouver and on the island of the same name.

Over one hundred mills ceaselessly cut the great cedar logs into millions of shingles. Six large pulp-mills at different points along the coast, grind the wood of the spruce and other trees into pulp, from which is made paper for newspapers, or news-print, as it is called.

British Columbia lumber for every climate. Great Steamers can always be seen at the wharves of Vancouver, New Westminster, and Victoria, loading with lumber for many parts of the world (Fig. 26). Some steam south-west to Australia and New Zealand, others either pass through the Panama Canal, or brave the storms that beat against Cape Horn in order to reach South Africa. Japan and China, with their swarming populations needing to be sheltered, are taking increasing quantities of British Columbia lumber every year. Railway ties for Egypt, house trimmings for South America, mine props, railway ties, masts, and piles for Great Britain, France, and other European countries, are all made from the timber of the Pacific coast.

By courtesy of C. A. Mathews.

FIG. 25. THE DEATH OF THE GIANT

What is the diameter of the tree? How thick is the bark? Are there any branches on the lower part of the trunk? On what are the men standing? How do their axes differ from those most commonly used? How high above the ground is the tree cut?

FIG. 26. BRITISH COLUMBIA LUMBER IN EVERY CONTINENT

The black line represents the water routes along which lumber is exported. The thickness of the line represents the amount sent along that route. To what country is most lumber exported? At what cities is it unloaded? To what parts of the British Empire is lumber shipped? Which part takes the most? What foreign countries are the best customers? Name the ports in each country where the lumber is received. Much not shown is shipped by railway to Central and Eastern Canada and the United States.

But still larger quantities are used nearer home. Immense quantities of lumber from the Douglas fir are shipped across the Rocky Mountains into the Prairie Provinces and Central United States, where trees are scarce and the price of lumber high. The steady demand for lumber along the coast of California, a dry country where there are few trees, is partly met by British Columbia. Eastern Canada, though so far away, is using British Columbia lumber in ever-increasing quantities, and some of the most ornamental door panels and other room trimmings in the beautiful homes of Toronto, Montreal, and other eastern cities, are made of Douglas fir or western red cedar.

Care of forests. The forests of British Columbia are partly owned by lumber companies and partly by railways, but the greater portion belongs to the provincial government. Over one million dollars a year is received by the government as fees from lumbermen for the privilege of retaining and cutting the timber. As the forests of British Columbia are the most valuable in Canada and perhaps on the continent, and as only a few parts of the world have a greater supply of timber than they require for their own use, every effort is being made to prevent the waste of the forest trees. The greatest enemy is the forest fire, started, in nine cases out of ten, through man's carelessness. In one week a fire can destroy more timber than all the lumbermen of the province cut in a year. Under the genial sunshine and nourishing rains of the Pacific coast, growth is so rapid that new timber is being produced by nature faster than it is at present being cut by man. It is thus possible with proper care to have a perpetual supply of lumber.

Hundreds of fire-rangers have their cabins scattered all over the province. Telephone wires strung from tree to tree, or lying on the mossy ground in the forest, make it possible to summon help from all directions to fight this red-tongued demon of the woods. Soon by careful organisation of the fire-fighters, and by the training of men and boys not to be careless with matches, cigars, and camp-fires, the forest fire will be no longer feared, and countless millions of dollars will be saved.

QUESTIONS

1. If you had to build a hut in a mining camp in British Columbia and had only an axe to make the lumber, which of the trees would you use?
2. Name the different ways in which forest fires are likely to begin. How can such fires be prevented?

3. A boat is loaded at Vancouver with lumber. State what waters it passes through, the distance it travels, and the number of days it takes, if it runs ten miles an hour, to go to (*a*) Yokohama, Japan; (*b*) Auckland, New Zealand; (*c*) Panama Canal. Use Map 2 in the Atlas.

4. Sitka spruce is used for making sounding-boards and the wooden parts of musical instruments. Why?

5. Why is it more difficult to study the birds in the trees of the Pacific coast than in those of the Atlantic coast?

6. On the east coast of Vancouver Island no rain falls for months at a time during the summer. What effect would this have on the spread of forest fires?

7. Lumber is shipped from the saw-mills at Prince George to Alberta. Describe the route it takes.

8. Why are the Prairie Provinces good customers of British Columbia for lumber?

GEOGRAPHICAL PEPPER AND SALT

Buenos Aires, with a population of 1,850,000, is the largest city in the Southern Hemisphere.

If all the railways of the world were stretched in straight lines side by side, the Canadian National would stretch a long way farther than any other.

If the world's annual production of gold was made into bricks, every third one would come from South Africa.

Few know that the United States of Colombia in South America far outstrips Russia in the mining of platinum.

Mount Everest in the Himalaya Mountains is the tiptop peak of the world, being nearly five and one-half miles high.

Two out of every three cups of coffee drunk are grown in Brazil.

One-half of all the chocolates eaten and of all the cocoa drunk is obtained from cacao trees grown in Gold Coast, a British possession in West Africa.

The Dutch are the greatest coffee drinkers, the British the greatest cocoa drinkers, and the Australians the greatest tea drinkers.

China still leads the world in the growth of tea, though both British India and Ceylon far surpass her in exports.

Germany leads in the growth of Irish potatoes.

As a fishing country Japan stands first, Great Britain second, and Spain third.

One-half of all the linseed oil mixed in paint comes from Argentina.

Spain and Italy run neck and neck for first place in the growth of the olive.

Though India has the greatest number of cattle, Argentina exports the most.

Every third pig that grunts is heard by a Chinaman.

Almost every second exported egg comes from China, and every fourth one from little Denmark.

Denmark, though one of the smallest countries, exports more butter than any other, and New Zealand and Australia are good second and third.

CHAPTER V

CANADA'S STREAM OF GOLD

A lonely camp. As far as the eye can see frown low dome-shaped knobs of rock. Pines, spruces and birches of moderate size, have forced their roots into every crack. In many places no particle of soil has been able to cling to the smooth rock, but in the lower parts a mixture of muck and moss supports a growth of thick-leaved bog plants. No road or path runs within many miles of this wild scene. The rocks are mostly granite-like and red. This is in Northern Quebec.

Yet in this forbidding spot there is a small tent pitched down near a stream, whose clear, cool, rock-stained water gurgles along, worming its way through the rocks. A lone man, hairy and brawny, is cooking breakfast over a small fire. What is he doing here? He is a prospector searching for gold (Fig. 27).

A helpless search. After finishing his meal, with heavy pack on back, he starts along the stream, which has chiselled a gorge among the rocky domes. He scans the steep sides carefully. With his pick or hammer he breaks off pieces and searches eagerly with a magnifying glass for glittering specks of gold. But each time the eager sparkle of the eye fades to dullness as he tosses away the useless lump. He has been searching ever since the snow melted, and it is now September. The high hopes of April have become blunted by successive disappointments. His food is nearly gone, his clothes are in tatters, and the rasping rocks have worn away the thick soles of his tough boots, so that he is nearly bare-footed. The desire for a rich strike bringing great wealth, pleasure, and ease, has prodded him on, but this is his last day. The spark of hope is almost spent.

Tripped by gold. As he moves along less carefully than usual, he trips and almost falls. He turns his head for a moment to see the cause, and there appears a whitish ridge projecting half an inch above the surrounding pink rock. Is it a flash of colour that makes his heart beat faster? He stoops down to where one of the few hobnails still left in his boots has scratched the whitish ridge, and there is the streak

of gold for which he has lived half his life. In a fever he breaks off pieces with his hammer and the true colour is in almost every lump.

Tracing the vein. He has struck a vein of gold. How long is this vein? How thick? How deep does it reach into the crust of the earth? Upon the answers to these questions depends its value. He follows it along for ten feet, when it is lost under some stones and earth. The new hope electrifies his muscles, and with his shovel he digs a trench and follows the vein for twenty feet farther, until it is lost under the rocky wall of the gorge. He follows it in the opposite direction until it is lost under the stream. How deep does it go? With a bar of steel ending in a chisel, he begins to dig a hole by thrusting it against the rock and giving it a little turn at every thrust. At the end of an hour he has a hole almost a foot deep. Dinner is forgotten. He drills the hole deeper and deeper. By six o'clock it is almost four feet deep. He puts a dynamite cartridge into it, attaches a fuse, lights it, and hides under a ledge of rock a hundred yards away. In a quarter of an hour there is a great explosion. He rushes back and removes the pieces of rock, searching each surface. Yes, the vein is still there at a depth of six feet, slightly thicker than at the surface, and the glint of gold lights up every lump from the vein.

Staking the claim. That is enough. The next thing is to secure the prize for himself. First he covers with stones and earth every trace of the vein. Next he studies carefully the direction in which the vein runs along the surface and its slope into the rocks. He measures a block a quarter of a mile square around the vein, fixes square stakes at each corner with his name on them, and his licence number, and the exact day and hour on the north-east stake. Finally he builds piles of stones at intervals along two sides. Then he starts for the nearest government office in order to register his claim.

Such is the life of the prospector, usually anxious, full of hardship and disappointment, but in one case in a thousand flushed with success.

The eye that sees through rocks. Before such a mine can be worked much money has to be spent, and the prospector has to seek the help of wealthy men. Many small holes have to be drilled (Fig. 33) from different directions to find the exact extent, course, and value of the vein as well as the presence of other veins. These holes are bored with a diamond drill, which is a hollow steel tube with six or eight diamonds set in one end. As this is rapidly turned, the hard diamonds wear a ring-like opening with a core of rock within. Foot after foot is

By courtesy of C. A. Matthews

FIG. 27. THE PROSPECTOR FOR GOLD

He is examining the gravel in the bed of the creek for particles of gold. The pan is used to wash away the lighter particles of sand and the gold is left behind.

By courtesy of Canadian Pacific Railway.

FIG. 28. DREDGING FOR GOLD IN THE NORTH

slowly bored, and the pieces of core as they are removed are placed in a line, which shows the complete section of the rock. Every vein the drill pierces is clearly shown. After drilling for months in all directions and spending thousands of dollars, they know enough about the veins to begin working the mine.

Burrowing in the solid rock. First a shaft ten feet by five feet has to be sunk five hundred feet into the rock. To dig a hole in earth to that depth would be a long and difficult task. How much more tedious is it to cut it out of the hardest rocks? All is done by blasting with dynamite. Holes several feet deep are drilled; these are charged with cartridges of dynamite and exploded. The surrounding rock is broken to pieces, which are removed, and another blast is made. By skill in drilling the holes in the proper place and direction, a straight shaft of regular shape and even size is gradually worked down into the rock. At every hundred feet in the shaft a horizontal tunnel, called a *level*, is blasted out in the same way. Then from each level other tunnels, called *crosscuts*, are blasted across the veins.

Getting the gold. At last all is ready to work the mine. A skip, or elevator, is in the shaft to raise and lower the men and to bring up the ore. A railway track is laid along some of the levels from the shaft to where the ore is being blasted out, and an electrical locomotive and cars are on the track. A special room is blasted out in which to store the dynamite. Furrows are cut along the floors of the levels to drain the water that leaks in through the stone walls and the roof. Great pumps force this water from tanks, in which it is collected, to the surface.

Work is begun along a vein that is exposed in the roof of one of the tunnels. Holes are drilled into the vein, it is blasted with dynamite, and the lumps of rock fall on the floor. Those containing no gold are left where they fall, while those containing gold are loaded on the cars. When the pile of rock has been thus sorted, another mass of rock is blasted from above. In this way the men work upward in the vein, standing on the pile of waste material that gets higher and higher as they proceed. In time they reach the level one hundred feet above. In a similar way every vein is followed upward and the valuable ore extracted.

From grey rock to gold brick. But how is the gold to be got from the rock with which it is mixed? When the ore is examined, the precious grains are so small and scattered that to the eye it looks

like ordinary, useless, grey rock. When the lumps come to the surface they are put through a *crusher*, which often consists of two great steel jaws that come together with terrific force and crush great boulders to pieces as though they were lumps of ice. The pieces from the crusher, which are of the size of nuts, are put into iron cylinders into which heavy steel hammers, weighing a quarter of a ton, pound down twenty or thirty times a minute. The lumps come out of these *stamping mills*, as they are called, as small as peas. Next, this granular mass is put in great cylinders, like barrels, containing steel balls, and the mixture is churned about until the ore is worn as fine as flour. It is then washed out as a fine mud. A stream of water that sweeps over the mud carries off the most of the light rock particles, and leaves behind the most of the heavy gold. It is then put into a large tank containing a very poisonous chemical, which dissolves all the gold and leaves behind any rock that was still adhering. Lumps of zinc put in this liquid cause all the gold to drop to the bottom as a black mud. The liquid is drawn off, and when the gold mud is put into a hot furnace the gold melts, sinks to the bottom, and is drawn off as a fiery liquid which is run into moulds. When it cools, a brick of beautiful yellow gold is turned out of the mould.

Coal mines. Though we have been describing a gold mine, silver, copper, nickel, lead, and zinc are obtained in a very similar way. Coal is found not in veins but in great layers, and is obtained by sinking a shaft much the same as for the metals. Of course it does not require to be crushed and extracted like the metals.

Nature's gold collector. Gold and silver are widely scattered through the rocks, but in such very small quantities that their extraction is usually not profitable. How did such large quantities become collected together in veins? Deep down in the earth it is believed that the heat is great enough to melt all rocks, and the pressure on each square inch is thousands of tons. Water so hot and under such pressure dissolves many minerals that at the surface of the earth do not dissolve. As the superheated water at these great depths passes along cracks in the rocks, or perhaps through melted rocks, it dissolves the small particles of precious metals, and as it later moves into a fissure where it becomes cooler, or under less pressure, it lets fall the gold and silver. As this continues for long periods the fissure may become quite filled, and the filling is called a *vein*. In this way the silver and gold that were widely scattered have been gathered together in the vein.

By courtesy of Canadian Pacific Railway.

FIG. 29. DUMPING THE WASTE
This takes place at the nickel mines at Sudbury, Ontario.

courtesy of Canadian Pacific Railway.

FIG. 30. THE GREATEST GOLD MINE IN THE WORLD
The Hollinger Mine at Timmins, Ontario.

But these veins are formed deep down in the earth and are covered by thousands of feet of hard rock. How is this vein brought to the surface to be discovered by the prospector? Only by having the rock above it worn away, or eroded, by decay, running water, scraping ice, and rasping winds. As these eroding agents act most rapidly on steep slopes, such veins are usually found in worn-down mountains and plateaus.

Ancient rocks of Canada. More than half of Canada is such a worn-down region. Let us draw a map of Canada. With clips fasten a piece of tracing-paper to Map 18 in the Atlas, then with a sharp lead-pencil trace the outline of Canada, also the chief islands and lakes. Now start on the Arctic coast just north of the middle of Great Bear Lake, and with a blue pencil draw a line through the middle of Great Bear Lake and Great Slave Lake, through the west end of Lake Athabaska, curving eastward to the north of Lake Winnipeg, following the east coast of this lake and then passing south to the border between Canada and the United States just west of the Lake of the Woods. Follow eastward the international boundary, the north shore of Lakes Superior and Huron, and the east shore of Georgian Bay to near Midland (Map 20). Then draw the line east from Midland to Kingston. Starting a little east of Kingston continue the line north to a little west of Ottawa, then sweep the line east from Ottawa to Quebec City. Finally follow the north shore of the St. Lawrence River to Cape Charles. Colour all to the east and north of this line blue and mark it with the Canadian Shield. That is probably the richest mineral area in the world, and it is almost all Canadian. Almost this whole area was once a high volcanic plateau, seamed with mountains thousands of feet high, but now it has been worn down within fifteen hundred feet of the level of the sea. Many veins are now laid bare.

Let us mark the other old worn-down areas of Canada that are likely to have mineral veins at the surface. Mark in blue the Notre Dame (nō′tr däm) and Shickshock Mountains in Quebec, the ridge running through the mainland of Nova Scotia and continued through the north arm of Cape Breton Island. Then in Western Canada mark the Selkirk, Cariboo (kar′i-bö), and Coast Mountains, and the mountains of Vancouver Island. We now have marked in blue the chief worn-down mountain regions of Canada, and let us find if the chief mining regions for metals are in them.

Gold. Canada now stands third among the world's gold producers. South Africa has a long lead, then the United States. In

Northern Ontario, near Timmins, is the greatest goldfield in America. The Hollinger mine (Fig. 30) rivals the greatest gold mines in South Africa, and great gold mines are springing up around it like mushrooms after rain. Up the coast of British Columbia, on Portland Channel, is another important goldfield. The third gold area is near Dawson, in the Yukon Territory, where the gold is not obtained from a mine in the rock but from gravel in the bottom of old river beds (Fig. 28). Thousands of years ago this gold was washed from the rocks and carried down by the rivers and creeks to be dropped to the bottom wherever the current slackened. On your map draw a large yellow circle at Timmins, a smaller one at Portland Channel, and a still smaller one at Dawson, to show Canada's chief gold production.

Silver. Canada is rich in the precious metals. It stands third among the world's producers of silver as well as gold. In 1906 silver was discovered in Northern Ontario near Cobalt, and soon it became one of the greatest silver camps on the continent, and it still contributes more than half of Canada's output. Put a large square on your map at Cobalt, another not quite half as large near Nelson in British Columbia, a third of the same size at Portland Channel, and a fourth small one in Yukon. These show the chief silver mines of Canada.

Nickel. Canada supplies two-thirds of the world with nickel. This beautiful metal was used chiefly in making armour-plate for warships, but since the Great War there is so little building of such ships, that the mine-owners have had to seek new uses for this metal, and they have succeeded so well that the industry is growing every year. Our new large five-cent pieces are made of this metal instead of silver. Put a large capital N on your map at Sudbury in Northern Ontario to indicate our great nickel mines (Fig. 29).

Other minerals. Canada stands high in the production of other minerals as well. With cobalt and asbestos (Fig. 34) she supplies most of the world. She stands fifth in the production of copper, fifth in the production of lead and zinc, and second in the production of arsenic. The copper is found near Sudbury in Ontario and at Anyox (an'i-ox) in Northern British Columbia; zinc and lead are mined near Nelson, British Columbia; the arsenic and cobalt are obtained from the silver mines at Cobalt; and asbestos is produced at Thetford Mines in Southern Quebec. Find the position of all these places from the Atlas and mark on your map the minerals, using the first letter of each name to stand for the mineral.

By courtesy of Canadian Pacific Railway.

FIG. 31. FRANK, B.C., TOWARDS CROWSNEST PASS

This is in the centre of the coal-mining. What is the nature of the surface? What season is it? Which way is east?

By courtesy of Canadian Pacific Railway.

FIG. 32. SMELTER AT TRAIL, B.C.

Ores are brought from the mines in British Columbia to this smelter to have the metal extracted.

Now find how many of these mining areas are in the old, worn-down regions of Canada.

Coal. Canada's most important mineral is yet to be mentioned. It is coal. Alberta leads, Nova Scotia follows closely, with British Columbia third. In Nova Scotia the chief mines are at Sydney and New Glasgow, in Alberta at Crowsnest Pass (Fig. 31), Edmonton, and Drumheller, and in British Columbia at Fernie near Crowsnest Pass and at Nanaimo (nä-nī'mō) on Vancouver Island. Mark solid black squares on your map to indicate the coal mines.

Although Canada stands so high as a mining country, only a narrow fringe has yet been touched. As railways open new areas, and as we increase our wealth in order to be better able to open expensive mines, our mineral output is sure to increase by leaps and bounds.

EXERCISES

1. Canada produces many minerals not mentioned in this chapter. Some of them are platinum, palladium, rhodium, feldspar, graphite, gypsum, mica, quartz, talc. Find from the dictionary or encyclopædia the uses of each of these.
2. Why are few metals found in the Rocky Mountains?
3. How could you separate a mixture of sand and sawdust?
4. Name all the articles of metal in your home, state the metals of which they are composed, and state which are produced in Canada and where.
5. I decided to build a boat. The lumber cost $150.30. I gave in payment fifteen ten-dollar —— pieces, one —— twenty-five-cent piece and a big —— five-cent piece. As I did not want the nails to rust, instead of using —— nails I used —— nails, though they were much dearer. The engine was largely made of ——. In order to have it as light as possible I had the steering gear made of beautiful white a——. The rudder was made of sheet iron, but to prevent it from rusting I had it galvanised with ——. The name was put on in brass letters, made of z—— and c——. In the engine the bearings in which the shaft turned were made of babbit metal, which is composed of t——, c——, and antimony.

Fill in the blanks with the proper names of metals and tell which ones could be obtained in Canada and where.

GEOGRAPHICAL PEPPER AND SALT

On the hills of Ceylon the natives peel from the trees almost all of the world's supply of cinnamon.

Most of the mother-of-pearl used for handles for knives is obtained from the sea north of Australia.

More than half of the world's automobiles are run by gasoline obtained from the petroleum of the United States.

CHAPTER VI

A TRIP DOWN THE FRASER RIVER

Would you like to feel the thrills of a trip by canoe down a great river with banks so high and steep, with current so swift, and with eddies so treacherous, that only one man ever dared the journey before? Well then, make ready for a trip down the Fraser River.

As you will often have to scramble over rocks and even climb steep cliffs, be sure to put on heavy hobnailed boots. Although it is summer you should wear warm clothing, as up in the mountains, where the river begins, the nights are chilly; indeed, even in August you make wake up and find the ground covered with snow.

At the source of the river. We now stand at the *Yellowhead Pass* (Figs. 44, 46); the mountains on every hand thrust their naked peaks above the green mantle of trees clothing their bases. We are in the midst of the Rockies, the most massive mountain range in Canada. The pass, stretching away to the east, forms a green lane guarded north and south by rows of stately peaks. Rushing down from the mountains to the south, a turbulent, muddy stream tears past us. This is the beginning of the *Fraser River*. What a contrast to the broad, quiet current that, about seven hundred miles away, discharges its placid waters into the Strait of Georgia.

Since no canoe could live in the eddies that seethe among the projecting rocks of the upper course of the Fraser River, we must follow on foot its windings through forests and swamps. As we walk on, suddenly the river expands into a little emerald lake, set like a jewel among the mountains.

Next a tawny torrent from the north tumbles its icy waters into the Fraser. We look towards its source, and behold! the most sublime picture in the whole thousand miles of peaks of the Canadian Rockies meets our admiring gaze. Massive mountains are on every hand, but over all stands *Mount Robson*, a giant among giants and immeasurably supreme. We see its upper heights dimly through a necklace of feathery

By courtesy of Mr. C. A. Matthews.

FIG. 33. DRILLING IN A MINE

What forms the walls of the shaft? How is the broken rock removed? The drills are on tripods.

By courtesy of Canadian Pacific Railway.

FIG. 34. THE SOURCE OF THE WORLD'S ASBESTOS

Almost nine-tenths of asbestos for the world comes from Thetford Mines in Quebec.

clouds, beyond which its pointed apex of ice, glittering in the morning sun, shoots up far into the blue dome. Mount Robson, with icy top, two and a half miles high, towers above every other peak in the Canadian Rockies, and round this monarch, appearing through the clouds in jagged outline, gleam many other opal summits.

Down the Rocky Mountain Trench. But as the journey before us is long and arduous, we cannot stay among these snow-capped giants but must hasten on our way. The end of the pass is in sight. At last we reach *Tête Jaune* (tĕt zhōn), where the Fraser deflects in a north-westerly direction, and we can board our canoes. While the Canadian National Railway was being built a few years ago, steamboats plied the river regularly for about two hundred miles below this point.

As the swift current carries our canoes forward we have time to look about us. The river in this part of its course flows through a remarkable valley, ranging from two to six or seven miles in width. If we observed the extent of this valley from an aeroplane, a unique sight would lie below us, for there, just west of the Rocky Mountains, runs an almost straight trench over nine hundred miles long (Fig. 36). It is as distinct as though it were furrowed by a plough, and its whole extent is occupied by important streams. In the south the *Kootenay* (kö-tĕ-nā′), then successively the *Columbia*, the *Canoe*—a branch of the Columbia—the *Fraser*, the *Parsnip* and *Findlay*, which unite to form the *Peace*, and two branches of the *Liard* (lē-ar′). This is the great *Rocky Mountain Trench* and, as the Fraser for over one hundred and eighty miles sweeps from side to side through its valley, we have splendid chances to study the surroundings.

On our right, shutting out the morning sun, are the jagged peaks of the *Rockies*, dull and dark except where high enough to be covered with snow. On our left are the lower peaks of the *Cariboo* (kar′i-bö) range.

This valley and its lower slopes are covered with forests of spruce, red cedar, and Douglas fir. These stately trees, in sombre green, form a fine setting to soften the rugged lines of the lower levels of the mountains. Giants of the forest are our companions by day and our protection by night, and we soon learn to love them. But we frequently find that these forests in many places have been swept away by fire, leaving only charred and naked trunks standing like black corpses in a desert. These ugly patches make ghastly scars in the otherwise beautiful

landscape. We hang our heads in shame and sorrow to think that man's carelessness has so disfigured the fair face of nature.

We search the mountain-sides with our powerful glasses, for we know that up above the timber-line the big-horn or mountain sheep finds pasture in safety. But as he is greyish-brown it is not easy to see him. Still farther up on the snow-capped peaks are the mountain goats (Fig. 38), the only pure white, hoofed animal in the world. One of our Indian guides tells us that if we are watchful we may catch a glimpse of a great, lumbering grizzly bear as he prowls through the woods or along the stream.

In the Rocky Mountain Trench we pass many thousands of acres of land so fertile and so well watered that a mere tickling of the soil would transform it into fields of swaying grain. This beautiful country has long waited for a railway. Now that the Canadian National serves it, the ugly half-burnt forests will become smiling fields, dotted with farm-houses, schools and churches.

Round the big bend of the Fraser. After four days, when we have passed through glorious scenery, we turn to the west, leave the beloved Rockies behind, and begin to swing around the north end of the Cariboo range. This is the *big bend* of the Fraser River. If at the bend we made a portage of a few miles we should be in Summit Lake, which drains, by means of the Peace and Mackenzie Rivers, to the Arctic Ocean. But instead we turn toward the Pacific. We pass by saw-mill after saw-mill as we glide round the bend, and at last we reach the bustling little town of *Prince George*.

Canada's first great gold rush. After resting a day in Prince George, we start again in a south-westerly direction. Here we part company with the Canadian National Railway, which at Prince George strikes west along a branch of the Fraser toward *Prince Rupert*—its terminus. We are now in a broad valley suitable for farming, but occasionally the valley contracts, the banks become high and rocky, the stream narrows, rapids toss our canoes, and we are swept through a dark canyon.

On the second day out from Prince George we reach *Quesnel* (kā-nel'), a sleepy little town perched up on a hill overlooking the river. As we watch its few hundred inhabitants moving leisurely about their business, we should never suspect that, sixty years ago, when the present streets of Victoria and Vancouver were covered with giant trees, ten thousand people hustled excitedly about their work here,

By courtesy of Canadian National Railways.

FIG. 35. PRINCE RUPERT, THE GREATEST FISHING TOWN IN BRITISH COLUMBIA

Describe the harbour. What is the character of the surface? Why are roads, sewers and water-pipes difficult to make? How do the houses differ from those of your district?

Fig. 36. The Basin of Fraser River

In what mountains does the river rise? Through what important pass does it flow? What town is at the western end of this pass? After leaving the pass what direction does it take and through what valley does it then flow? What mountains are on the right and left of the river? After leaving this valley in what direction does it turn? What town is near this turn? Across what plateau does it then flow? What tributary joins it from the east? Into what body of water does it empty itself? What two large cities are near its mouth?

and that every creek swarmed with frantic miners digging eagerly into sand and gravel for gold.

There to the east, between the Fraser River and the mountains, lie the famous Cariboo gold-fields, which, like a magnet, drew men in feverish haste from all parts of the world. The mighty rush filled the country with prospectors, and in the wild scramble to get there first, hundreds were drowned in the rapids of the Fraser River, or died of hunger and hardship trying to cross the yawning canyons, or climbing over the jagged mountains of this trackless wilderness. A few seekers were successful, and many million dollars' worth of gold were washed from the gravel along the creeks.

Little gold is now mined in this district, only a few old-timers are left, but they still delight to spin yarns of the Cariboo trail in the memorable "sixties."

A thrilling ride through the canyons. As we proceed south-west, we are cutting diagonally across the interior plateau of British Columbia. Its surface is ridged by many cross-ranges and furrowed by gaping chasms and steep-walled canyons. Gradually the vegetation changes, the dense forests of the north being replaced by a growth of small scattered trees, which tell us that we are entering a region of little rainfall. Still farther south the scattered sage-brush, pushing up through the parched sand, shows us that we are in the driest part of Canada, locally known as "the dry belt."

The Fraser River has bitten deeply into the horizontal rocks that form this plateau, and as we advance, the rocky borders become higher and steeper. In places the banks are hundreds of feet high, arching above us until they almost meet over our heads as we skim along. The waters, gloomy and seething, are fearful to behold. The great explorer, Simon Fraser, alone has ever dared to run these rapids. Our guides sit calm and determined as our canoes skim along in tense silence.

At last we see ahead rapids so wild that no canoe could survive them. We know that they continue for many miles, and as the rocky banks are almost impossible to climb, the canoes must be "cached" along the bank.

Now our hobnailed boots are our best friends. Through the canyon we plod our weary way, over rough, rasping rocks, along almost vertical ledges, and across foaming torrents. After several days of exhausting climbing we arrive in *Lytton*, hungry as bears and as tired as galley slaves.

The massive granite barrier of the *Coast Range* still stands defiantly across our path, extending from one end of the province to the other. The Fraser has yet to burst its way through this frowning mass. It has now received water from all its great branches, and gathering these forces together it hurls them along the deep canyon, which it has cut for itself through these granite rocks. At one point, called *Hell Gate*, the rock was so resistant that only a narrow gap has been made. Through this throat rushes a mad swirl of waters, the full volume of this mighty stream.

We decide to make the passage, not by boat, which is impossible, nor by trail, which is dangerous, but by railway. Luckily for us, two transcontinental railway lines—the Canadian National and the Canadian Pacific—enter the valley of the Fraser at Lytton. The railway runs first along rough ridges (Fig. 40) and then through flat delta lands deposited by the river. We take the Canadian National, our own railway, and follow the left bank along every turn of the river.

The garden of British Columbia. After its last struggle to get through the Coast Range, the Fraser emerges exhausted from its final canyon at the quaint old town of *Yale* and flows quietly along for the rest of its course through the most beautiful expanse of flat agricultural land in the province (Fig. 41). At Hope we board a steamer and make the rest of the trip in comfort. What a change from peaks encased in frosty armour, massive mountain chains, thundering waterfalls, brawling torrents, giant forests, and arid slopes of sage-brush. Here is the wide, placid river, bordered by well-cultivated fields, grassy meadows with sleek, well-fed dairy cattle, and many yards planted with raspberry, loganberry, currant and gooseberry bushes. Some fields produce the choicest strawberries found in Canada. Others have vines twining about tall stakes. These are the only hop-gardens in Canada. Dotted over broad ranches and flowery gardens may be seen rows of bee-hives. But most delightful of all are the beautiful homes, with well-trimmed lawns, surrounded by trees and shrubs, ample witness to the industry and prosperity of the people.

The Fraser delta. As we near the mouth of the river the land becomes very flat and low. Indeed, it is a delta, and composed chiefly of the sediment brought by the river from the land through which it has flowed. What tales the little particles of sand could tell! One was once a piece of rock on the top of Mount Robson and was ground down by heavy pressure of a glacier. A second grain beside it

By courtesy of Canadian Pacific Railway.

FIG. 37. LICKING A SALMON CAN CLEAN

There is no more playful pet than the cub of the black bear, and in the parks of Western Canada, where bears are protected, they have become quite tame and feed on garbage from the summer hotels.

By courtesy of Canadian National Railways.

FIG. 38. ROCKY-MOUNTAIN GOAT

This very shy animal lives in the highest parts of the mountains. What colour is it? What colour are its nose, eyes, and horns? Is its fur short or long? Describe its horns. It is twice as large as a domestic goat. This is a mother with her young.

By courtesy of Canadian Pacific Railway.

FIG. 39. WHERE PRIZE APPLES ARE GROWN

An orchard at Summerland, B.C. Describe the surface of this region. What is the use of the furrows running along the orchard? Account for the sparse vegetation on the mountain slopes. The water necessary to irrigate is brought down from springs on the adjoining mountain slopes.

once lay a nugget of pure yellow gold in the Cariboo Mountains, and a third was split off from rock by the rootlet of a great Douglas fir tree.

In the Fraser delta we pass many small settlements with country stores and industrious people. Several large salmon canneries stand deserted along the banks, as the schools of this fish no longer enter the river in their countless numbers.

Crossing beneath the great bridge we at last reach the point where the river divides, forming the north and south branches. Here is situated on the northern bank of the river the beautiful city of New Westminster, where we see great saw-mills, and lower down boats fishing for salmon in the river, salmon canneries, and ocean steamers. The lower Fraser contains the only fresh-water harbour on the Pacific coast, and here ocean-going steamers come to have their steel bottoms freed from the clinging barnacles which thrive in salt water.

GEOGRAPHICAL PEPPER AND SALT

Hong-Kong has the greatest trade in feathers of any port, but in ostrich feathers Port Elizabeth in South Africa leads.

Nine out of ten capsules of quinine swallowed to cure fever are extracted from cinchona bark grown on the island of Java, in the Dutch East Indies.

Though three-fourths of the raw silk is unwound from cocoons by Chinamen, the chances that your silk dress came from China are much less than that it came from Japan, as the latter is by far the greatest exporter.

If the people of the world were extended in a line, every fourth person would belong to the British Empire, every fifth one would be a Chinaman, but two hundred would stand between every two Canadians.

Great Britain has the greatest trade, and Canada stands fifth.

Canada now stands second in wheat production, and first as an exporter of wheat.

Among the chief producers Belgium has the highest yield of wheat per acre, and Australia has the lowest.

Quito is the only important city on the Equator; Singapore, in Malay, is very near it. On or very near the Tropic of Cancer are Havana, Cuba; Mecca, Arabia; Calcutta, India; and Canton and Hong-Kong, China. On or near the Tropic of Capricorn are Antofagasta, Chile; Rio de Janeiro, Brazil; and Rockhampton, Queensland.

The only city with a population of half a million at a greater altitude than six thousand feet is Mexico.

The most northern settlement in the world is at Hammerfest in Norway, the most southern is in South Georgia Islands in the South Atlantic Ocean; both are engaged in fishing.

The longest canal and also the oldest is the Grand Canal of China (850 miles long). It extends from Tien-tsin to Hankow.

CHAPTER VII

THE THROAT OF THE ROCKIES

THE YELLOWHEAD PASS

What is a pass? "Father," said Donald, who is in the sixth grade at school, "did you ever see a pass in a mountain?"

"Yes, my boy, I have gone through the Yellowhead Pass (Fig. 46) in the Rockies several times, once in 1890 on horseback, when I was searching for gold, and twice on the Canadian National Railways."

"Why do we have to learn a definition of a pass in school, father?"

Mr. Keith was puzzled for a minute and then said, "I will answer your question by asking another. What has been done in order that heavy loads can be carried over the hill running across the road near the school?"

"Why," said the boy at once, "the road bends a little to one side as it comes near the hill in order to avoid its highest part, lying directly in front."

"That is correct, my boy, but something else has been done."

"Yes, I know," replied Donald eagerly. "Many hundreds of loads of earth have been removed from the higher parts of the road to the base of the hill."

"Now, imagine that hill growing until it is two miles instead of one hundred feet high, and twenty miles instead of six hundred feet across, and you then have a mountain nearly the size of those in the Rockies. Next imagine a great gap cut across it like the one in the hill and you have a picture of the Yellowhead Pass" (Fig. 46).

"Is this pass as straight as the road through the hill?" asked the boy, full of wonder.

"No, Donald, it is anything but straight. It swings from side to side like the windings of a river."

Who dug the Yellowhead Pass? "Father, was the Yellowhead Pass ever high like the road before the cut through the hill was made?"

"That is a good question. Yes, the winding gap of the Yellowhead

FIG. 40. TWO GREAT BRIDGES ACROSS THE FRASER RIVER

Describe the banks of the river. Is the current swift? What is the surface of the country like? Which of the bridges is higher? Which is an arch bridge? One bridge belongs to the Canadian Pacific Railway, which crosses from the east to the west side of the river, the other to the Canadian National, which crosses from the west to the east side of the river.

By courtesy of Canadian National Railways.

FIG. 41. THE GARDEN OF BRITISH COLUMBIA

This is farm land in the Fraser Delta. What is the nature of the surface in the distance? What is one of the chief farm products? From this barn what would you judge as to the amount of crop grown? How many buildings can be seen? For what is each used?

Pass, three miles wide and four thousand feet deep, was once filled with solid rock, and the long lane that now opens before the traveller was not there."

"Well, father, who cut through this pass? Surely men did not remove the earth and rock on wagons as they did from the gap in the hill?"

"No; there are not enough men in the whole of Canada to have done that, but two giants much more powerful have been at work gnawing out that gap through the mountains. Look at that map. What do you see winding through the pass?" (Fig. 44.)

"I see nothing but two small streams, one running east and one running west. They carry down water but they do not carry down earth and rock, do they?"

"When I travelled through that pass for the first time, Donald, I drank the water from these streams, and at times it was almost white with sediment. Once I allowed a pailful of it to stand over-night, and in the morning the bottom of the pail was covered with a layer of mud. As every pailful transports almost a spoonful of mud, and many millions of pailfuls flow down in a year, do you not think these rivers might in time carry down a good deal of earth?"

"Well, father, I never thought before how much work a stream can do; why, it can work as fast as a thousand horses, and it never stops night or day. So these small streams are the two giants?"

"Yes, this whole pass and almost all others are eroded by running streams."

Are passes useful? "Father, are passes of any great use to people?"

"That is a very thoughtful question, and I shall try to answer it. Mountains are great barriers. The animals to the west and east of the Rocky Mountains differ considerably. This is true even of the birds, which have evidently found this great high mass difficult to pass. The robins, meadow-larks, and flickers of British Columbia are quite different from those of the prairies. Indeed, such light and airy particles as seeds have found its high ridges too great a wall to climb over, for many of the trees and other plants on the opposite sides of the mountains are of different species.

"When seeds and birds are separated by this ridge, so are men. For many years British Columbia was almost cut off by the mountains from the rest of Canada. It is true the Indians long knew of the Yellow-

head and other passes and used them as gateways to British Columbia. Later, when the trader came, the bales of furs, each worth a fortune, were carried along this and other passes to the east. But only when the railways crept up through the passes (Fig. 44) did this, one of Canada's finest provinces, begin to advance."

"Father, if there were no passes, could railways be built across the Rockies?"

"That is exactly the point I was coming to," said Mr. Keith. "If there were no passes, a railway, or even a road, could scarcely be built across a high range of mountains like the Rockies. Even if one were made, the cost would be so great, and the gradient so steep, that it could only be run at too great expense to pay its way."

"How does the gradient make a railway more expensive to run?" asked the inquisitive Donald.

"That can be well illustrated from the Yellowhead Pass. The Canadian National Railways built both their great transcontinental railways through this pass because it is so low. As a result this line has great advantages over every other railway that crosses the Rocky Mountains. Look at the pictures here of the Canadian National and Canadian Pacific Railways (Fig. 45). The latter selected the Kicking Horse Pass, which, though farther south than the Yellowhead Pass, is more than sixteen hundred feet higher. As the Canadian Pacific has to haul every freight train over this high ridge, its gradients in both directions are much steeper, and its engines cannot draw so many cars as can those of its more favoured rival, which runs through the Yellowhead Pass. The same number of men are required to manage a train, whether it is long or short, but the steeper the gradient the more fuel is used, therefore the Canadian National has a great advantage over the Canadian Pacific in hauling freight through the mountains, and all because that railway went through a lower pass."

"I have been reading in the papers, father, that much of the wheat from the Prairie Provinces may soon be shipped to Vancouver. I should think this low pass would give the Canadian National a great advantage over the Canadian Pacific for this purpose."

"Yes, my boy, I think you're right. Although the Canadian National crosses the mountains much farther north than the Canadian Pacific, nevertheless its route across British Columbia to Vancouver is a few miles shorter. Further, its gradients are much lower, not only through the Rockies, but also across British Columbia, and

By courtesy of Mr. C. A. Matthews.

FIG. 42. CALGARY: THE GUARDIAN OF KICKING HORSE PASS

Find this city on Map 22 in your Atlas. What river flows through the city? Is the site of the city uneven or level? Notice that the land rises in the distance. How many railways enter the city? How many pass west from the city?

FIG. 43. EDMONTON: THE GUARDIAN OF THE YELLOWHEAD PASS

Find this city on Map 22 in your Atlas. On what river is it? Find the river in the picture. What is the character of the surface around Edmonton? Are there trees in this city?

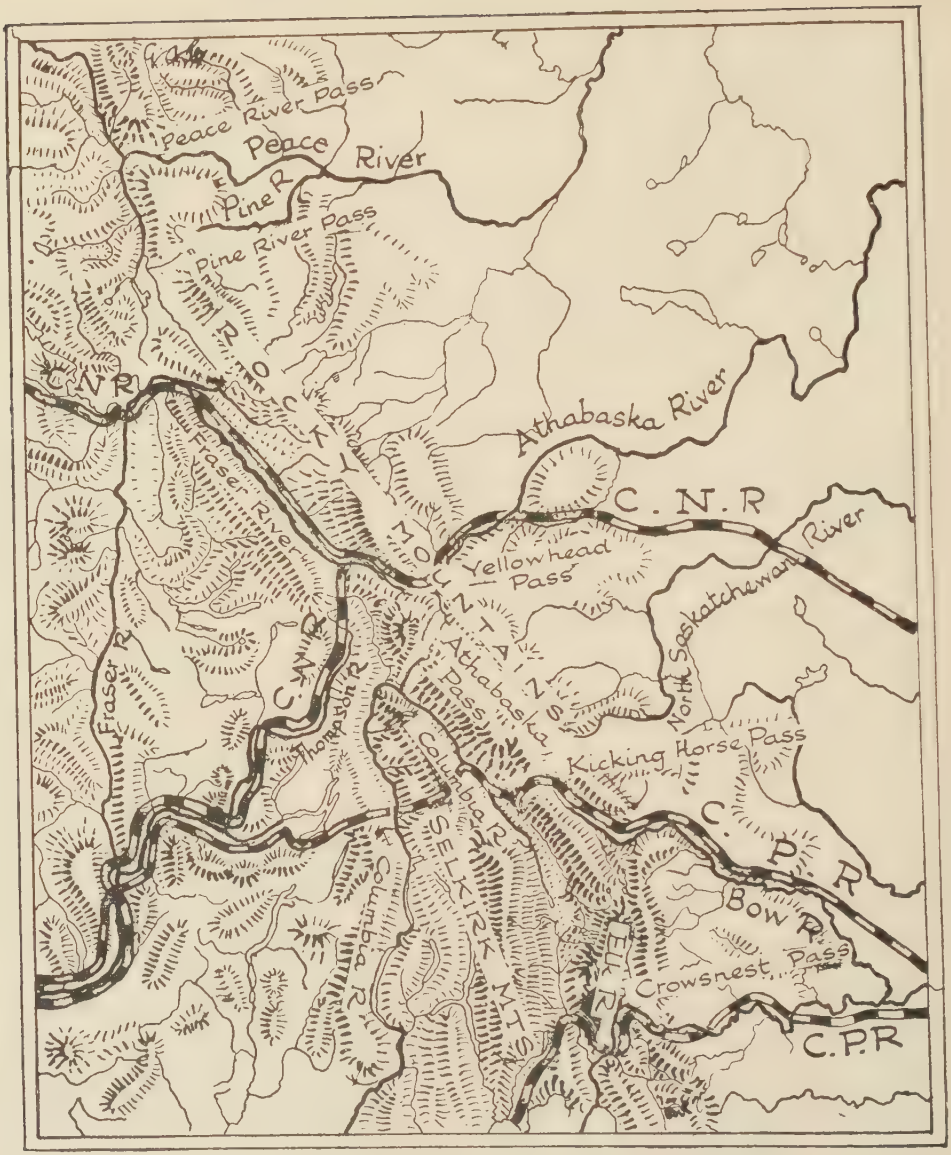


FIG. 44. PASSES THROUGH THE ROCKIES

Find six passes marked on the map. What river enters each pass? Which have railways through them? The following are the heights of the passes: Peace River, 2000 ft.; Pine River, 2850 ft.; Yellowhead, 3712 ft.; Kicking Horse, 5332 ft.; Athabaska, 6025 ft.; Crowsnest, 4459 ft. How do the heights change from south to north?

therefore it should be able easily to compete with its great rival, which has had almost forty years' start of it.

"Now, Donald, my boy, I am going to ask you a question. When I was in school we used to learn the names of all the high peaks but not the names of the passes. Which are more important to man, the peaks or the passes?"

This made Donald pause and think. He had heard of the splendours of giant Mount Robson, of the beautiful whiteness of Edith Cavell, and of the many tourists who flock to see these glories in the summer. A chum of his had stopped at Banff, and told him of the equally sublime mountain peaks near Kicking Horse Pass.

"Well, father," he said at last, "I think the peaks are just about as important as the passes."

"Suppose," said his father, "great volcanoes broke out near both these passes, blew to atoms the peaks, and filled up the passes with lava, volcanic dust, and mud, then which would people miss more, the peaks or the passes?"

"Well," said Donald, "the people would no longer flock by thousands to see these great peaks, and all the money they spend on their tours through Canada would be lost."

"But," said his father, "British Columbia contains half a million people, and what would they do with their chief entrances to the rest of Canada barred? Vancouver would begin to shrink, Prince Rupert would pine and die, and every town and village in the interior would be cut off, to a great extent, from the whole of Eastern Canada. Moreover, the rest of Canada would also suffer. The fresh salmon and halibut in the shops would be dearer or absent altogether, the Prairie Provinces could no longer get lumber easily to build their houses and barns, and apples from British Columbia would no longer be seen in the stores of Edmonton, Calgary, Toronto and Montreal. Thousands of businesses all over Canada would be ruined."

When Donald saw that he could not stand up for the peaks after this attack he said, "Well, father, you have convinced me of the importance of passes, and I now see that they are far more important than peaks. Are there passes in other mountains as well as in the Rockies, and are they as important as the Yellowhead Pass?"

"Yes, the Alps in Europe have several passes that have been great highways of traffic for thousands of years. Almost all mountains have these passage-ways, and usually important towns have grown up at

each end as a result of the traffic that passes along these busy arteries (Figs. 42 and 43). The history of the world would be very different from what it is if the mountains were without passes."

QUESTIONS

1. Do rivers in passes have gentle currents or are they swift and filled with rapids?
2. Which railway is likely to carry more wheat to Vancouver, the Canadian National or the Canadian Pacific? Give reasons.
3. Why are the railway lines which pass through the Prairie Provinces more direct than those through British Columbia?
4. Is the winter snow deep in the Yellowhead and Kicking Horse Passes? Give reason for your answer.
5. Why are mountain passes fortified when they form the boundary between countries?
6. Why is it usually cheaper to carry goods by steamer than by railway?
7. Name two important towns in Alberta near the entrance of the Yellowhead and of Kicking Horse Passes.

GEOGRAPHICAL PEPPER AND SALT

The port of Basra near the Persian Gulf exports more than half the dates of the world.

A pitch lake in Trinidad furnishes the world with most of the asphalt used to pave streets.

The tiptop point of Canada is Mount Logan in Yukon, which is 19,850 feet high.

Nine-tenths of the natural gas of the world issues from wells in the United States; Canada and Poland run hard for second place.

The Mackenzie River is the largest in Canada and it also has the largest drainage basin.

London (7,476,000) is the largest city in Europe; New York (5,870,000) is the largest in North America; Osaka (1,600,000) is the largest in Asia; Buenos Aires (1,850,000) is the largest in South America; Sydney (1,000,000) is the largest in Australia; and Cairo (850,000) is the largest in Africa.

New Zealand exports the most cheese of any country. Holland stands second, and Canada third.

Victoria Falls on the Zambesi River in Rhodesia are the greatest and grandest in the world. They are two and one-half times as high as Niagara and about one mile wide. Yosemite Falls in California with a drop of 2550 feet are the highest in the world.

The largest number and the finest quality of emeralds, one of the most valuable precious stones, come chiefly from Colombia in South America. Rubies come chiefly from Burma in India.

Jerusalem is the sacred city of Christianity and Judaism, Mecca of Mohammedanism, Benares in India of Brahmanism, and Lhasa of Buddhism.

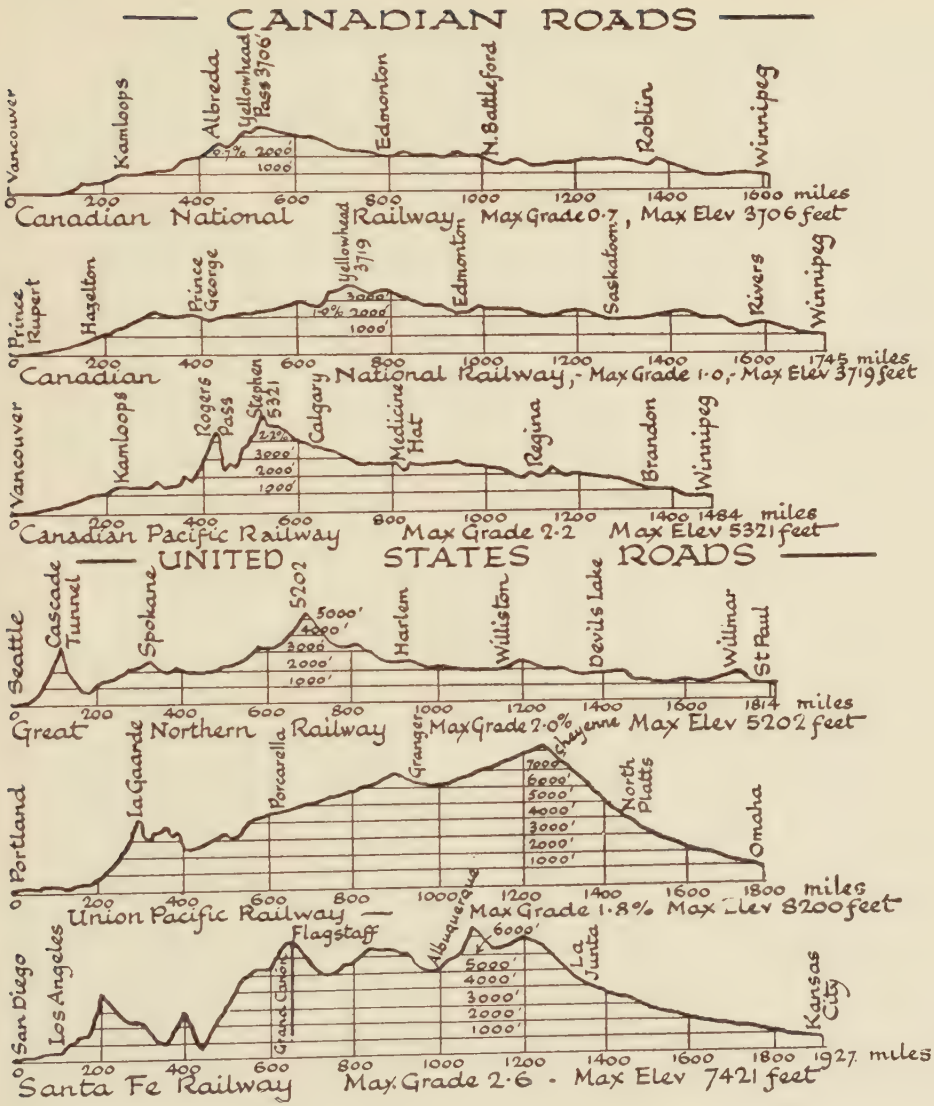


FIG. 45. THE GRADES OF TRANSCONTINENTAL RAILWAYS

The distances along the base line of each are in miles, the heights of the horizontal lines are in feet. What is the distance from Winnipeg to Vancouver via C.P.R. and via C.N.R.? What is the distance from Winnipeg to Prince Rupert? What is the greatest height along the C.N.R., the C.P.R., and along the three chief United States railways? What is the maximum grade on each railway?

By courtesy of Canadian Nationa Railways.

FIG. 46. THE NECK OF THE BOTTLE: THE YELLOWHEAD PASS

Notice the low valley bounded by hills, and winding among the mountains. Which are higher, the near or distant mountains? Give your reason. Are the upper parts of the distant mountains covered with trees? Why is the name, Rocky Mountains, appropriate? What kind of trees grow on the borders of the pass?

CHAPTER VIII

THREE VISITS TO A RUSSIAN PEASANT

THE STORY OF THE IMMIGRANTS TO CANADA

My First Visit

Russia in winter. It is the winter of 1905 and I am far away in Russia. Only a few dead weeds here and there poke their bare branches above the layer of glistening snow that covers the whole level country. In the distance, a line of evergreen trees follows the windings of the river. As the bells jingle along the road, I come suddenly upon a sleigh with a broad, triangular, wooden top, covered with straw and drawn by a bony weakling of a horse.

The Russian peasant. Sitting in the straw is the strange man about whom this chapter is written. A long sheepskin coat, which when new was yellowish brown, is now a polished greasy chocolate. A coarse rope is knotted around his waist. Folds of felt around his feet and ankles make them look of enormous size. A pointed leather cap covers his whole head, except where here and there wisps of tangled, tawny, yellow hair and beard protrude. As he looks up I see a pair of vacant, lustreless eyes, and the tip of a broad-spread nose. This is the Russian peasant.

The peasant's house. I ask him to show me his home, and this he does willingly. Down by the frozen lake I see a cluster of white dots on the still whiter landscape and a few dark beams uncovered by snow, and here and there the curl of blue smoke tells me that they are houses. As I approach them I notice that they are very small, that they face in all directions, if they have any fronts, and are made in the most clumsy manner. The walls are of logs laid one on the other and the pointed roof is of beams covered with grass. But in many cases the grass or thatch, as it is called, has been removed to feed the starving cattle and sheep. One dirty pane of glass, as big as a lady's handkerchief, and a door about four feet high made of rough boards, show which is the front of the house.

The front room. I enter through the door, which shuts with a creak behind me. It is as dark as night and I sink over my ankles in barnyard slush. A whirr of wings above showers filth down on

my head, while a scared animal rushes between my legs. By its grunt I know that it is a pig. The stench of this front room is sickening, and as my eyes become accustomed to the darkness I can at length see dimly above my head beams, on which fowls are roosting, while pigs, a goat, and some sheep, waddle in the filth on the floor. A tub is the nearest approach to furniture in this Russian parlour.

The living-room. At last I see a door leading to a second room. As I open it a hot, humid, fetid smell hits me in the face and almost drives me back. But I screw up my courage to force my way through.

There are the mother and children in filthy rags, but happy and satisfied with their surroundings. The dim light from a dirty pane of glass shows a big stone oven that covers one-third of the room. A table, weak in the legs, a bench still weaker, a tub, and a few dishes of iron and wood for cooking, make up the furniture of the room. There are no beds, as the family huddle together on the broad flat top of the oven at night, and the pigs, lambs, and fowls, which are also present in this room, sleep wherever they can find a place.

The family. Neither parents nor children were ever at school, and no member of the family can read or write. Their minds, though almost a blank, are like unworked mines, only waiting for education to reveal their riches.

This Russian peasant is very poor, rather lazy, and tills his small farm badly. The produce from his fields cannot supply the family with food and clothing, and more than half of the ninety millions of Russian peasants always feel the pangs of hunger.

Farms in long strips. The Russian farm is of a very strange shape. The lands of each community are cut into long strips often only a few yards wide, and a number of these strips, sometimes separated from one another by many other strips, is what he calls a farm. The houses are not built on the farms, but are all together in a village often several miles away. The plough is a stake sharpened at the end, the harrow has wooden points, but this peasant is better off than most of his neighbours since he has a horse—if such a poor, lean creature can be dignified with such a name. All the grain from the Russian's ten acres is cut with a sickle and threshed by hitting it with a stick called a flail.

Such were Mr. and Mrs. Ivan Minchov and their four sons, Nikoli, Stopan, Antan, and Ivan, and two daughters, Sabena and Nastia, when I first met them.

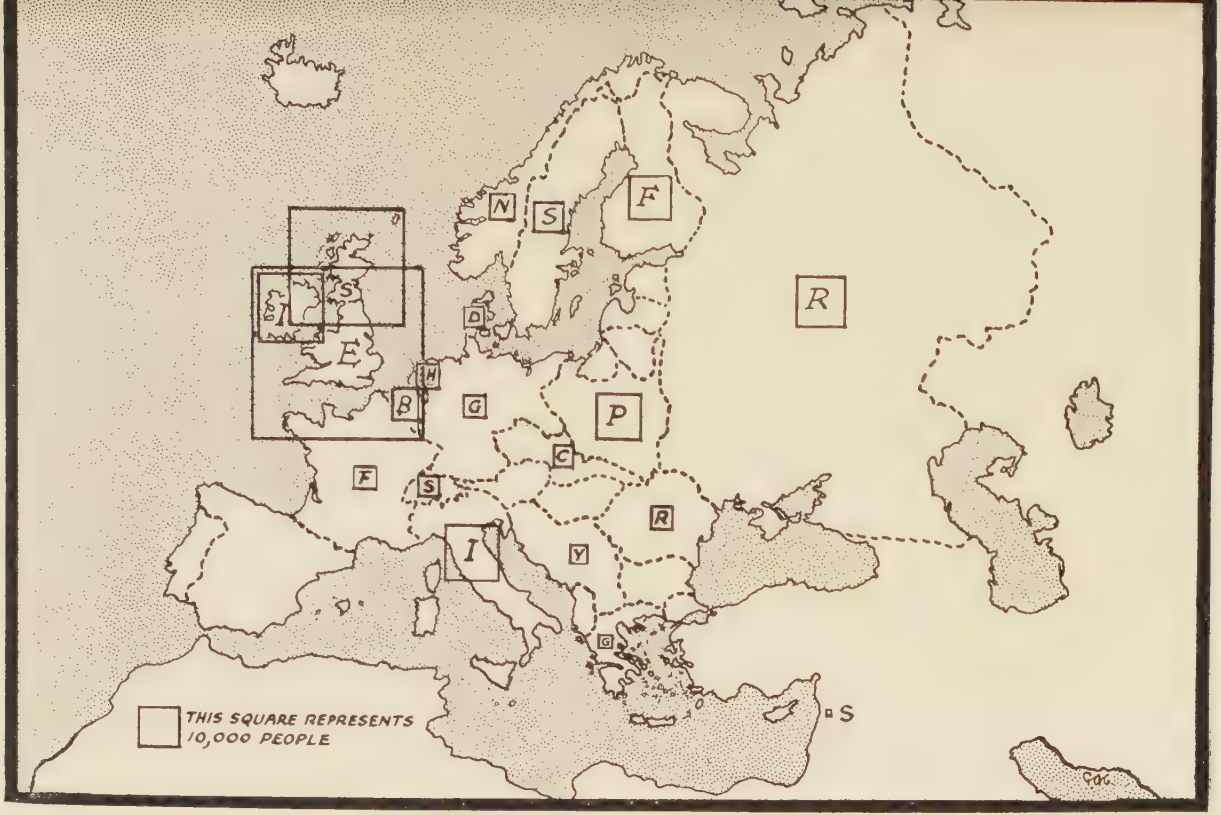


FIG. 47. WHERE THE NEW CANADIANS COME FROM

The square on each country represents the number of people who came from that country to Canada between 1917 and 1924. The letter at the centre of each square stands for the country. By comparison with the square in the lower left-hand corner of the picture estimate the number of immigrants from each country. Which country has sent the most people? What are the next three in order? Which country on the Mediterranean Sea has sent the most immigrants? What important countries have sent few people to Canada? Has Northern or Southern Europe sent more people? Give a reason for this.

By courtesy of Department of Immigration and Colonisation, Ottawa.

FIG. 48. A FIRST GLIMPSE OF THEIR NEW HOME

Immigrants arriving at Quebec.

My Second Visit

A new family in Canada. During the summer of 1910 I was in a small town in Northern Manitoba and I took a ride in the country. The people I met did not look like Canadians, and the houses were mean log huts, and some of them had walls built of sods. I knocked at the door of one of the houses to inquire the way to Yorkton. What was my amazement to be met by Ivan Minchov, whom I had last seen five years before in a peasant's hut in Russia. He seized my hand, pulled me into the house, and with much vigour told of the good fate that directed him to Canada.

All aboard for Canada. A former native of Ivan's village had returned from Canada to take his family back to his new home. With eager eyes and gaping mouths the peasants of the village heard of fertile farms twenty times as large as theirs, which could be obtained free in Canada. For the first time in his life the spark of ambition was kindled in Ivan, his eyes shone with a new light, and he determined to go to such a bountiful land. That summer he and his family worked the farm with a new purpose, and during the winter he laboured unceasingly in the city, until at last he had saved enough money to buy tickets to take the family to the land of promise. Many others in the village did the same. After great difficulty and delay they got the consent of their government to leave the country. Though they travelled third-class on the steamer they had never seen such luxury in their lives. After being tossed about at sea for two weeks, their eyes caught a first view of their new country, as the grim, rocky shores of the river St. Lawrence rose on either hand.

Across Canada. In another day they gathered up their boxes and bundles to land at Quebec (Fig. 48). Before they left the boat they were carefully examined by a doctor to see that they had no contagious or loathsome disease. The family was placed in a large shed (Fig. 49) with many other immigrants from Russia, Austria, and Germany, to await their train and to be examined further. Here they found every convenience. There were places to wash, eat, rest, and sleep. Advisers, who talked to them in their own language, answered their many questions and made them feel that Canada was a good country. As the journey would require five days, Ivan had to buy a good stock of food for his large and hungry family. In a few hours after landing they

boarded a colonist sleeper, and were soon speeding past the French-Canadian villages along the St. Lawrence.

Ivan had once been on a train in Russia, but the Canadian colonist sleeper, compared with that, seemed like a bit of paradise. They had bunks to sleep in which were far cleaner and more comfortable than the top of the old oven. Besides, there was a big cook-stove ready to fry their eggs and toast their bread, and boiling water to make the tea that every Russian loves. As the great forests, and especially the towering rocks of Northern Canada, were swiftly passed the children were delighted, for they had never seen such objects before. As the train entered the prairie the children were less interested, but their parents had a lonely and far-away look in their eyes, for it reminded them of the flat, grassy steppes of their native Russia, which they had left behind them forever. At last they were at their new home. Let Ivan tell his own story.

A pioneer on the prairie. I found the shapes of the farms very different from the long narrow strips in Russia. The land had all been surveyed into six-mile squares called *townships*, each of which was divided into thirty-six squares called *sections*. The section was divided into four square farms called *quarter-sections*. I was given a quarter-section free. Just think of it, 160 acres for nothing, and I could never have hoped to own one-tenth as much in Russia by working a whole lifetime. The land was level, the soil black and fat, and more than half of it was ready to plough; the other half was partly low and wet, and partly covered with small poplar trees.

A house of sods. But I had no money, no house, and no farm implements. My only possession was a big family, and of what was I to build a house? The trees were too small. On the Steppes of Russia I had seen houses built without wood before. We cut great sods from the turf and piled one on the other to make the walls. Then poplar poles were stretched across from wall to wall and covered with sods, while a layer of matted grass on top completed the roof. I was assisted by the government in buying a yoke of oxen, farm implements, and seeds. The very first year I harvested a larger crop than I had ever done before. The next spring I bought cattle and pigs, and my wife soon had flocks of chickens, ducks, and turkeys.

Canada's greatest gift. But Canada gave me something far sweeter than crops and cattle. My children went to school, learned to speak English, and we had to give up the crude and filthy habits

By courtesy of Department of Immigration and Colonisation, Ottawa.

FIG. 49. BAGS, BOXES, BASKETS, BUNDLES AND VALISES OF NEW ARRIVALS

Immigration sheds at Quebec. These foreigners are waiting for trains to carry them to Western Canada.

By courtesy of Department of Immigration and Colonisation, Ottawa.

FIG. 50. MANY IMMIGRANTS ARRIVE IN NATIVE COSTUME

This Dutch family will soon make their way with their cleanliness, tidiness and superior intelligence. What kind of boots do the men wear? How do the garments differ from ours?

By courtesy of Department of Immigration and Colonisation, Ottawa.

FIG. 51. CANADA'S HOPE

Children of immigrants who are filling the vacant spaces in Canada and developing its resources. Canada needs all the good immigrants she can get.

of life practised in Russia through a hundred generations. This log house which you now see, soon replaced the sod hut. No longer do poultry, pigs, and sheep share the house with the family, but have their own shelters. From the teacher my children learned to keep their persons clean and to dress neatly, and taught their parents to do the same. Our new surroundings have given us pride, hope, ambition, and a desire to make better use of our lives. That is why we love Canada.

My Third Visit

A New-Year's party. It is New Year's Day 1925, and again I find myself in Northern Manitoba after an absence of fifteen years. I drive out once more to see how my friend Ivan and his family are getting along. I can hardly believe my eyes as I draw up in front of the farm. What a change from the miserable filthy shack which I visited in Russia! There stands an imposing, two-storey, brick house which would have done honour to a judge. Large trees surround the house, and a shrubbery and hedges show through the snow. No calves, pigs, or sheep now share the sleeping quarters with the family. A great red barn, the largest for miles around, stands in the centre of the barnyard, and around it are cattle sheds, implement sheds, and poultry houses.

I knock at the door and Ivan himself answers it. But it is not the Russian peasant with the lustreless eyes and the sheepskin coat, but an alert, intelligent Canadian citizen, erect, neatly dressed, and with a kindly dignity. As I enter I find, instead of the little bundles in filthy rags grovelling in the dirt, six young men and women. All are tastefully dressed, attractive, and speak English as fluently as persons born in Canada. They have come home for the holidays. The two boys, Nikoli and Stopan, are attending the university at Winnipeg, Antan runs an elevator near Saskatoon, and Ivan is working the farm. Both daughters, Sabena and Nastia, are teaching school, one in Regina, the other in Calgary.

From wheat to stock. Ivan and his boys and girls had worked hard and lived plainly. At first they directed all their energies to growing wheat, but one hot, rainy August, just as the crop was at its best, a withering blight laid it low in a few days, so that there was less than half a yield. Then Ivan decided that it was not safe to depend

on wheat alone. In a similar manner, a cutting hail-storm, an early frost, or a blight might destroy the whole crop in a few hours; so he began raising stock. Wheat, oats, hay, and clover were grown to feed the stock; sunflowers were grown for ensilage. Milk was shipped every day to Winnipeg, and the fat cattle always fetched a good price, while turkeys, fowls, and ducks were the charge of the women. Then even if one crop failed he still had a good deal to sell. Besides, his land was not becoming less fertile because he took a crop off without returning anything to keep up the fertility. Now manure was being added, and the land was each year becoming richer. Thus intelligent farming brought in steady profits.

The making of young Canadians. At first Ivan was careless about the education of his children. But they were compelled to attend school, and soon he saw a remarkable change. The children could speak English, and they were becoming ambitious; they urged him and their mother to improve the house and even taught their father many ways by which he could improve his farming. Then he became eager to send them to school, and now all had been through the high school and two were in the university.

After supper, to which I was invited, the sons and daughters were asked to make speeches about the cities in which they lived. I will reproduce these speeches.

ANTAN'S SPEECH

Saskatoon, the railway centre. My elevator is at Cory, which is only a few miles from the beautiful city of Saskatoon (sas-ka-tön′). As the river valley of the South Saskatchewan is so shallow, the Canadian Pacific and the two lines of the Canadian National Railways cross it by three splendid bridges. Here is the chief railway centre of Saskatchewan. In summer this city is surrounded by one great field of waving grain for a hundred miles. It is no wonder that the Canadian Government has built a great elevator with a capacity of three million five hundred thousand bushels, and that the Quaker Oats Company of Chicago have built a great mill.

Saskatoon has beautiful streets, well shaded with trees, excellent building-stone, an abundant supply of pure water, cheap electricity, splendid churches, and spacious schools, so that it is an attractive city to

By courtesy of Mr. C. A. Matthews.

FIG. 52. THE PRINCE OF WALES'S RANCH IN ALBERTA

By courtesy of Department of Immigration and Colonisation, Ottawa.

FIG. 53. ELEVATORS LINE THE RAILWAYS EVERYWHERE ON THE PRAIRIES

How many elevators are there in this village? Why are they in a line? Why are they so high? Explain their use.

By courtesy of Department of Immigration and Colonisation, Ottawa.

FIG. 54. NUMBER ONE, MANITOBA HARD

How high is the grain? What grain is it? Notice the fine buildings.

By courtesy of Department of Immigration and Colonisation, Ottawa.

FIG. 55. A SQUARE MILE OF GOLD

What grain is shown in the foreground? What is the character of the surface? How far does the shocked grain extend? Why is the grain left standing in shocks?

live in. Nowhere in Western Canada can a finer collection of buildings be found than those of the University of Saskatchewan, which overlook the sweep of the river. Saskatoon is the city for me.

NIKOLI'S SPEECH

Winnipeg, the hub. The hub of the prairies is Winnipeg (Fig. 67). All the railways from the west dip down from Lake Winnipeg and cross the Red River at this great city. Every car-load of grain travelling toward the Atlantic Ocean rolls through this commercial centre. Its wholesale houses sell many goods used in the towns and villages that dot the prairies. Though its university buildings are not so new as those of Saskatoon, yet the provincial university is much older. Its parliament buildings (Fig. 67) are the pride of the west, and among the most magnificent on the continent.

NASTIA'S SPEECH

Calgary, the key to the Kicking Horse Pass. I teach in the stirring city of Calgary (Fig. 42). The Bow River winds like a silver ribbon through the town, and on each side is a flat plain bounded by steep slopes. The city has spread beyond the plain, has crept up the steep sides of the valley, and is already well established on the higher land beyond. It stands as the guardian of the Kicking Horse Pass. From it are distributed most of the goods used not only in Southern Alberta, but also in Eastern British Columbia. Near it is the great ranching district of Alberta, and its stock-yards are unsurpassed in Western Canada.

Just east of Calgary is the great Bassano (bas-san′-ō) dam, flung across the Bow River, and the water collected above this dam irrigates almost seven hundred thousand acres, the products from which are largely distributed from Calgary.

This is the largest city between Winnipeg and Vancouver. Though it is primarily commercial, abundant coal and cheap natural gas are rapidly attracting factories. Its enjoyable weather both in winter and summer, splendid situation, and hustling business, make it the city for me.

SABENA'S SPEECH

Regina, the queen city of the prairies. Saskatchewan is the most populous of the western provinces and has had the most rapid growth. The value of its crops is far greater than that of any other Canadian province. My city, Regina, is the capital of that marvellous province and is its heart. Its dignified parliament buildings, large and well planned, are surrounded by beautiful grounds decorated with trees in the prairie where trees are difficult to grow. Because it is nearer the centre of the prairies than any other large city, the great mail-order houses and many banks are located in Regina. Above all it is a city of homes.

. . . . . .

Such were my three visits to the Russian peasant. He is one of more than a million that have come from the crowded countries of Europe to Canada, and many millions more are still to find homes in the open stretches of our country. Many from England, Scotland, Germany, Norway, and Sweden were not so poor and ignorant as Ivan's family when they arrived, and many do not become so prosperous, but there is a chance for all to do better and to become Canadian citizens who can help our country. All our boys and girls, men and women, should strive to assist these newcomers to whom all is strange and difficult.

GEOGRAPHICAL PEPPER AND SALT

Fort William and Brandon have the largest proportion of adults that can neither read nor write of any Canadian cities; London has the smallest proportion.

Cotton garments are most common, and two-thirds of the world's cupply of cotton is grown in the cotton belt of the United States.

Every second automobile tire is made from rubber grown in British Malaya.

It is not generally known that the Belgian Congo has more than twice as great water-power as any other country; scarcely any of it is developed.

Canada grows more bushels of oats than she does of wheat, but the value of the wheat is far greater.

The Australians like sugar most, next come the people of the United States, and Canadians stand third in this taste.

The little state of Honduras in Central America is the greatest exporter of bananas, and the island of Jamaica is second.

FIG. 56. WHERE ALBERTA'S LAWS ARE MADE

The Parliament Buildings at Edmonton have a commanding position overlooking the Saskatchewan River.

By courtesy of Department of Immigration and Colonisation, Ottawa.

FIG. 57. GETTING ON IN ALBERTA

Nick Charuk, a Russian living north of Vegreville, has done so well that he now lives in a real house. How were the walls of the old house constructed? Describe the roof. What evidences are there that he is a careful farmer?

By courtesy of Mr. C. A. Matthews.

FIG. 58. THE FIRST HOME OF A RUSSIAN PEASANT IN ALBERTA

How large is the house? Of what are the walls built? With what is the roof covered? Why are the poles hung over the roof? Of what is the chimney made? What is the nature of the country? Find the well, the ladder and a hen.

CHAPTER IX

WHICH IS GOING TO BE LARGER, TORONTO OR WINNIPEG?

Why have Toronto and Winnipeg become great cities? On what expanse of water is Toronto? (Map 20 in Atlas.) Name six large American cities on the Great Lakes that can be reached by boat from Toronto. How many railway lines enter Toronto? What railway lines run from Toronto to Sudbury? and to North Bay? If goods were being shipped by railway from Western Ontario to Western Canada, would they pass through Toronto?

In what direction do the railways from Alberta and Saskatchewan turn as they enter Manitoba? (Map 22 in Atlas.) Why? Why are the railways running east and west not deflected to the south of Winnipeg? On what two rivers is Winnipeg? How many railway lines enter the city?

A DEBATE BETWEEN TWO TORONTO BOYS (D'ARCY BOULTON AND BEVERLEY ROBINSON) AND TWO WINNIPEG BOYS (JAMES ASHDOWN AND DONALD SMITH)

D'Arcy Boulton's Speech

Miss Teacher and fellow-pupils. Toronto has had a long start in the race with Winnipeg. To-day with her 540,000 people she is almost three times as large as the prairie city (Fig. 66). Thirty years ago she was almost as populous as Winnipeg is to-day. During the last ten years the increase in population of Toronto has been almost three times that of the western city, and its rate of increase has also been greater.

The growth of cities may be compared to that of snowballs rolling down-hill. From their sheer size the large balls as they rush down press more snow into them than do the smaller ones. In the same way the big city by its sheer size attracts more people than does the smaller one. Hence, according to the law of growth, Toronto should outdistance Winnipeg more and more.

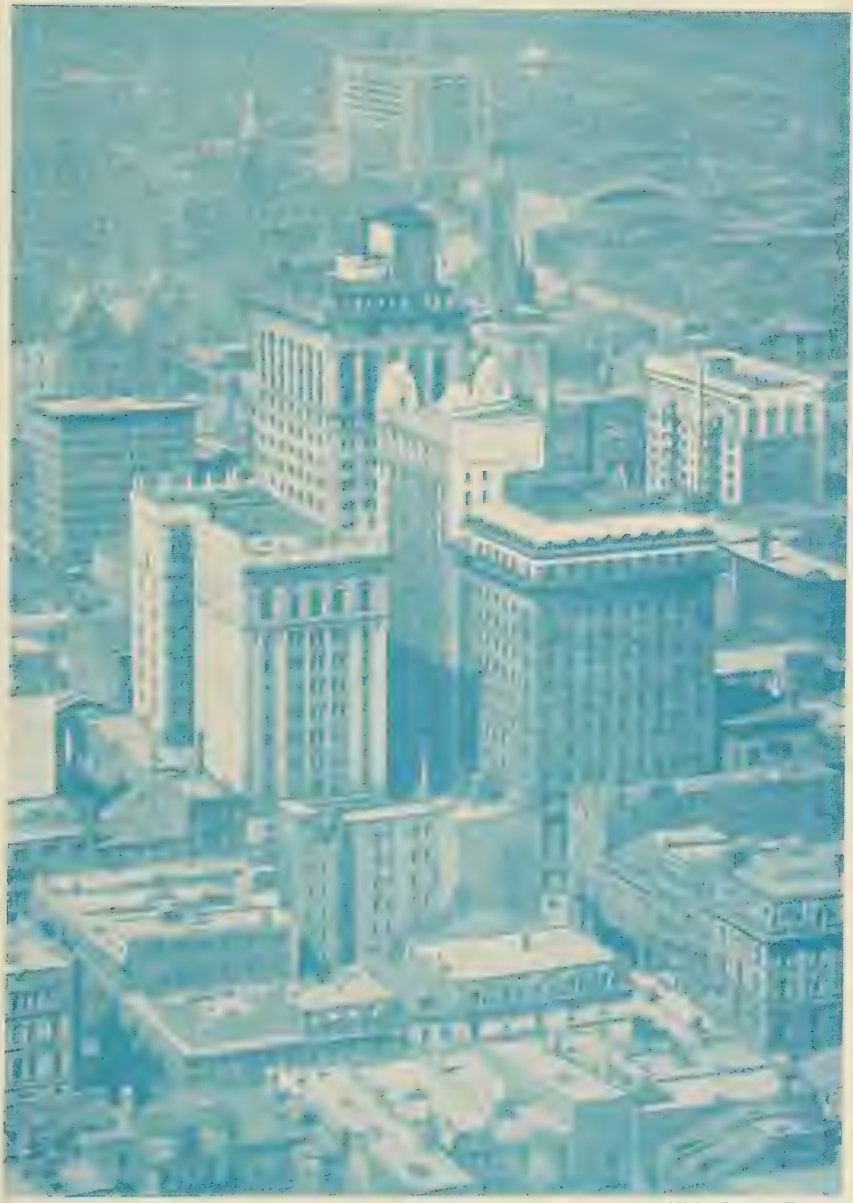
Toronto's shipping. What are some of the attractions that have drawn people to this great city? First of all its well-protected harbour

gives access to Ontario, one of the Great Lakes, the greatest inland waterway in the world (Fig. 62). By means of these huge expanses of water, and the majestic St. Lawrence River, Toronto has an unrivalled water-route that gives access to every ocean. These waterways bring the great cities of Chicago (she-kä′-gō), Detroit (de-troit′), Cleveland (klēv′-land), and Buffalo (buf′-a-lō) to her very doors for trade. It is certain that soon the canals on the St. Lawrence River will be so deepened and improved that ocean steamers will navigate the Great Lakes. Then the giants of the ocean will steam into Toronto's spacious harbour to load automobiles for Australia and New Zealand, agricultural implements for Russia, Egypt and India, cotton cloth for West and South Africa, and bacon, cheese and butter for England and Germany. Many of the products of Ontario which at present are shipped from Montreal will then be loaded at this new ocean port. These changes will cause a rapid growth in population.

Toronto's feeders. Toronto is well situated for the collection of products from Western Ontario and the distribution of manufactured goods there. A spider's web of railways, with Toronto at its centre (Fig. 62), covers this part of the province, and this is the most densely populated and richest agricultural and manufacturing region in Canada; it is no wonder that Toronto is a great commercial city. Hundreds of trains, laden with cattle, horses, sheep, swine, poultry, butter, eggs, furniture, stoves, automobiles, and thousands of other articles, steam into her yards every day. These products are partly used by her own people, but are chiefly shipped to other parts of Canada and abroad.

Toronto and Niagara Falls. Much of the majestic stream of water that formerly flowed over Niagara Falls has been harnessed to make electricity. Great cables, which radiate like spokes of a wheel, conduct this power to the towns and villages of Western Ontario. No longer is the tall smoking chimney seen and the pounding steam-engine heard. Electricity from Niagara turns the wheels of the factory more cheaply, quietly, and dependably. The magic touch of this cheap power is causing factories to spring up all over the land, like mushrooms after rain. These new industries produce a corresponding growth in Toronto, the commercial centre of the region.

I have thus shown how well Toronto is situated to become a great commercial city.



By courtesy of Publicity Bureau, Toronto.

FIG. 59. TORONTO'S SKYSCRAPERS

Count the number of storeys in the high buildings.

By courtesy of Mr. C. A. Matthews.

FIG. 60. THE LARGEST UNIVERSITY IN THE BRITISH EMPIRE

University College, the Arts building of the University of Toronto. This is considered one of the most beautiful buildings on the continent of North America. This great university has 650 professors with other instructors, and about 5000 students.

By courtesy of Mr. C. A. Matthews.

FIG. 61. CANADA'S GREATEST MARKET-SQUARE

Hamilton is surrounded by one of the best farming districts in Ontario, and on market days the farmers drive in and sell from their wagons, butter, eggs, poultry, vegetables and fruit. Notice the wagons in rows and the women buyers carrying baskets.

James Ashdown's Speech

Winnipeg still a thriving baby. *Miss Teacher, boys and girls.* When the country served by Winnipeg was still the undisputed home of the buffalo and Red Indian, Toronto was larger than any city now situated between Winnipeg and Vancouver. This great western city is an infant of only fifty years of age, but she is already larger than was Toronto when it had passed its hundredth birthday (Fig. 66). Thus Winnipeg's growth has been more than twice as rapid as that of Toronto in its early years.

Winnipeg in the neck of the bottle. A glance at a map of Canada shows that Winnipeg is the Canadian Chicago. Lake Winnipeg bars the way across Canada from east to west, except for a narrow passage to the south. That passage is made still narrower by the Lake of the Woods bulging north of the Canadian border. All routes from the prairies to Eastern Canada are forced through this narrow neck (Fig. 63), and Winnipeg stands at its centre. No other city in Canada, perhaps no other in the world, has such a unique position.

Three great transcontinental railways run across our country, and every one of them passes through Winnipeg alone among the great cities of Canada. Vancouver, Edmonton, Saskatoon (sas-ka-tön′), Fort William, Ottawa (ot′-ä-wä) and Montreal have two transcontinental railway lines; Calgary (kal′-ga-re), Regina, Quebec (kwe-bek′), St. John and Halifax (hal′-i-faks) have one; but Toronto has not one within a hundred and fifty miles of its borders.

Every bushel of wheat, oats, and linseed, every head of stock from the Prairie Provinces shipped east by Canadian routes, passes through the great railway yards of Winnipeg. The vast area of this fertile belt, whose products flow into Winnipeg for further shipment, is sure to contribute to its rapid growth. Since Winnipeg's hinterland, as the Prairie Provinces are called, is more than twenty times as large as Western Ontario, the hinterland of Toronto, it is easy to understand what magic strides Winnipeg is bound to make as the prairies fill up with prosperous farmers. At present it is safe to say that not one-seventh of the prairie land fit for cultivation is under crop, and as more and more of this land is brought under the plough, the increased production will be reflected in the increasing population of Winnipeg.

When we turn to Western Ontario the situation is very gloomy.

Not only is there little hope of increasing the amount of farm-land, but year by year the rural population is actually becoming less and the agricultural produce is decreasing. This shrinkage is bound to react on the growth of Toronto.

The railway supersedes the river. It is true that Winnipeg has no such fine waterway as the Great Lakes. Nevertheless the Red River is navigable, and Lake Winnipeg gives access by boat to the northern part of the province. But railways are more and more replacing internal waterways. At one time boats used to run on the Saskatchewan as far as Edmonton, but since the Canadian Pacific Railway was completed, the steamboat has vanished from the river. Just as certainly as new railways are built in Ontario, Toronto's importance as a port will dwindle. Moreover, when ocean steamers are able to pass into the Great Lakes, it is quite possible that many of the goods, now brought to Toronto for shipment by water, will then be loaded on to boats at Sarnia (sär'-ni-ä), Goderich (gōd'-rich), Owen Sound, and other Lake Huron and Erie ports to the injury of Ontario's chief city. Still worse, the head of navigation may then be transferred from Montreal to Port Arthur and Fort William, from which may be exported the western products that now are shipped from these lower-lake ports.

Beverley Robinson's Speech

Madam Chairman and fellow-pupils. Before giving further reasons why Toronto should rapidly become one of the greatest cities on the continent, I wish to point out the weakness of some of the arguments of my worthy opponent.

Wheat shipped west to go east. A few years ago it was true that the golden grain of the prairies passed largely through the Winnipeg bottle-neck, so vividly described by the opposition leader. But the completion of the Panama Canal has turned commerce into many new channels. One of the most interesting to Canada is the new route for the wheat of Alberta. The two lines of our own Canadian National Railways, which follow the Yellowhead Pass, have gradients so low that wheat can be carried to Vancouver much more cheaply than to the Atlantic Coast. Already, with feverish haste, gigantic elevators are rising along Vancouver Harbour, but these are not built fast enough to receive the wheat that is being rushed through the mountains

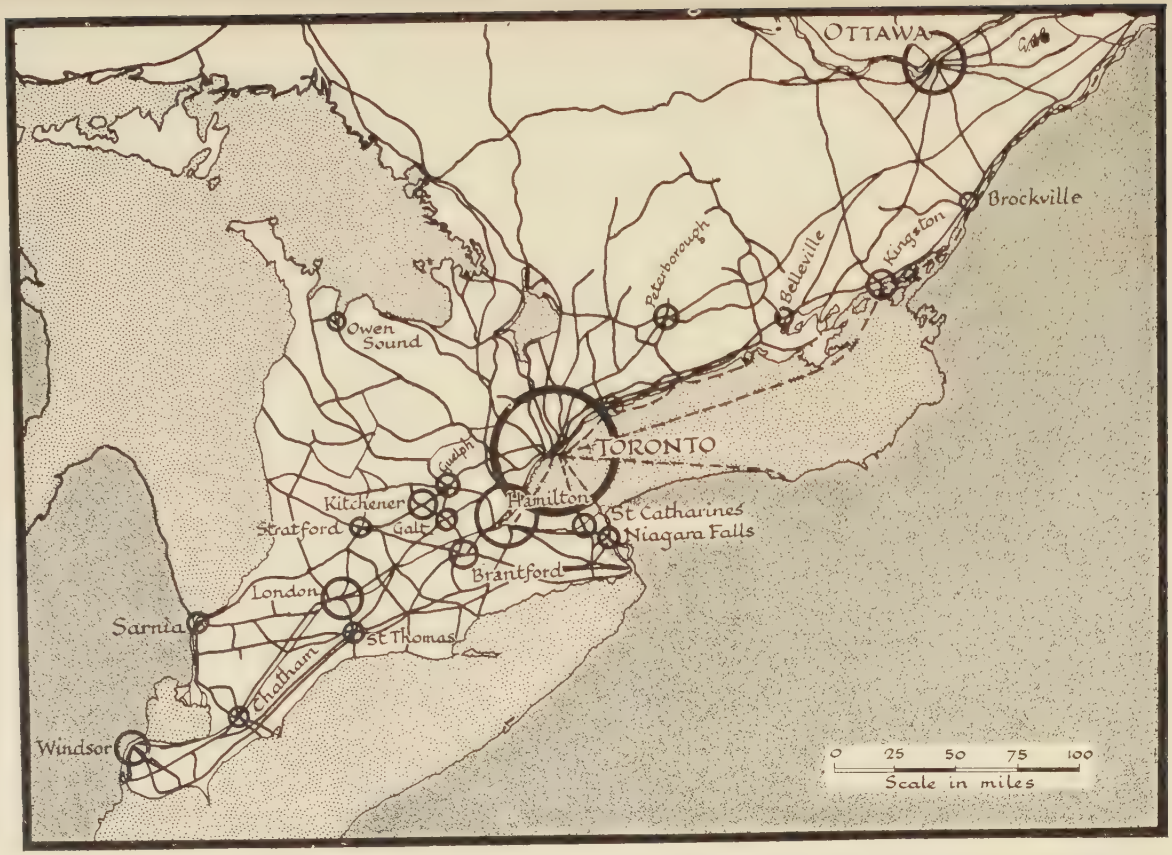


FIG. 62. THE SPIDER'S WEB OF RAILWAYS AROUND TORONTO

The circles represent the cities of over ten thousand people. The relative sizes are according to population. By means of a ruler measure carefully the distance across the circles and arrange the cities in order of size. How many railways run to Toronto? How many boat routes pass from Toronto? Name the cities on the map within fifty, and within one hundred, miles of Toronto. In which part of Ontario is the greatest number of cities? Name three great railway cities in Ontario.

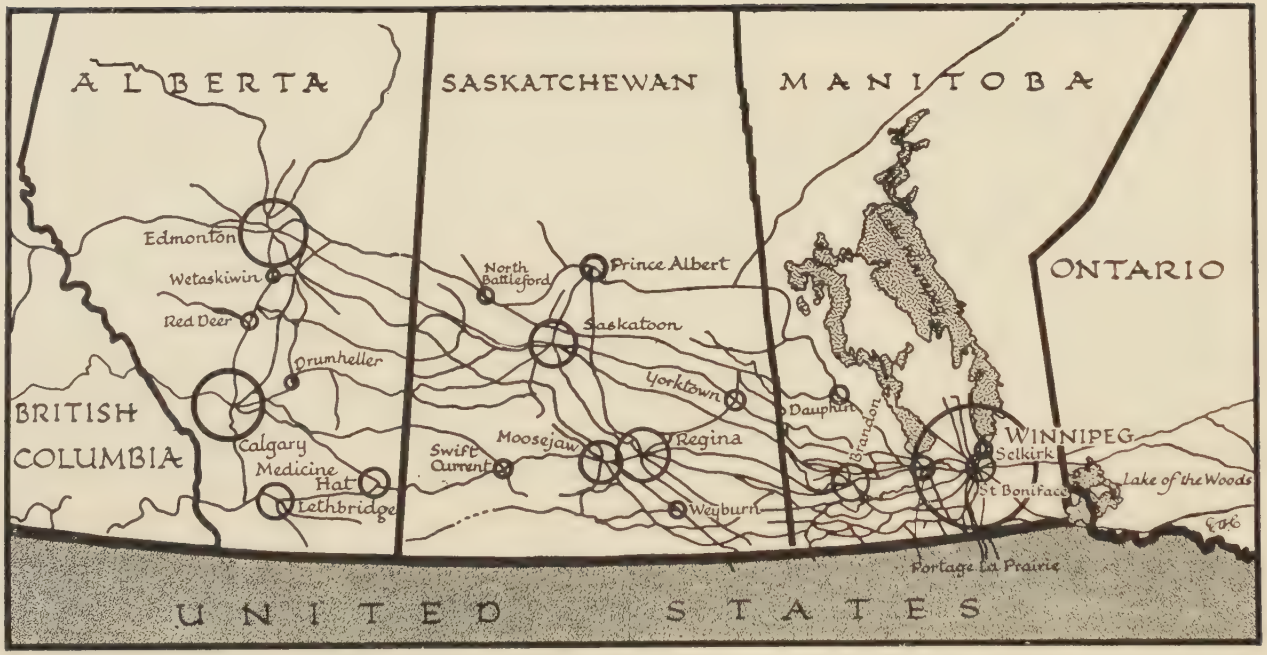


FIG. 63. THE RAILWAY FEEDERS OF WINNIPEG

The circles represent the cities and larger towns, and the sizes are according to population. Why do the railways in the northern section running east and west turn south in Manitoba? How have Lake Winnipeg and Lake of the Woods helped to make Winnipeg grow? How many times as large as Calgary is Winnipeg? Which is larger, Calgary or Edmonton? Regina or Saskatoon? Regina or Edmonton? Which has larger cities, Alberta or Saskatchewan? Name in order of size the eight largest cities in the Prairie Provinces. How many railways run out from Winnipeg, Regina, Saskatoon and Calgary? How many railways pass east into Ontario from Manitoba? What is the name of the railway passing north of Lake Winnipeg?

every month. These great buildings are evidence that the glory of Winnipeg is departing, and that more and more of the western wheat will reach the Pacific through Vancouver and not the Atlantic through Winnipeg.

Another cloud is appearing in the Winnipeg sky. A railway from the prairies to Port Nelson on Hudson Bay is nearing completion, and this will give the shortest grain route from the prairies to Europe. While it is still uncertain how far this line may be valuable for shipping, Winnipeg alone among the cities of the west will feel the full force of its rivalry.

Electricity the life-blood of Toronto industry. We have not yet described all the vigorous tap-roots that contribute to Toronto's sturdy growth. A dozen great cables, supported by high towers, stretch from Niagara Falls to Toronto. These act as giant arteries through which flows unceasingly the life-blood of industry—electricity. It turns the great machines which weave cloth and carpets, makes wood and metal instruments, constructs great automobiles, knits and makes clothing of all kinds, and brings to perfection a thousand other articles. Toronto maintains a dense population of well-to-do people ready to buy manufactured goods, and since its electrical power is very cheap, it is no wonder that Toronto pays more to factory hands in wages than any other city in Canada. But as yet she only feels the first pulse of this great wave of cheap electricity.

A political and educational centre. Toronto is the capital of Ontario, the richest and most populous of the Canadian provinces. Many officials are required to control affairs. This city is also the chief educational centre of Canada and attracts thousands of students to its various schools and colleges, among which is the University of Toronto, the largest in the British Empire (Fig. 60).

Thus we see that commerce vies with manufacture, and education with government, in contributing to the growth of this fair city.

Donald Smith's Speech

Winnipeg the centre of manufacturing for the prairies. *Miss Teacher, boys and girls.* It has been truly said that farming is the most important of all industries, and that all others depend on it. Although the prairie has just begun to yield its harvests, a great city has already

sprung to life where the Assiniboine pours its muddy waters into those of the Red River. Manufacturing follows farming. In Ontario electrical power is widely distributed. Hamilton, St. Catharines, Kitchener, Peterborough, Ottawa, and other cities have electrical power near at hand, as Toronto has, and these cities are bound to take their share of manufacturing industry. In the Prairie Provinces it is different. On the flat plain there are few rapids and waterfalls to produce electricity. A few miles east of Winnipeg, however, the level fertile land is replaced by the rough, rocky Canadian Shield, whose rivers foam with rapids and roar with cataracts. These sources of power are close to Winnipeg but distant from other prairie cities. Already this young city has a thousand industries. Winnipeg will manufacture for the whole prairies, as she is almost the exclusive possessor of abundant power among cities of the west. In the not very distant future, while Toronto is sharing with dozens of other Ontario cities the manufacture of goods for farming communities of Southern Ontario, Winnipeg will throb with vibrating machines of factories supplying the varied needs of millions of prosperous farmers living on the vast Canadian prairies.

PUZZLE QUESTIONS ON CANADIAN CITIES

1. What city, on an island, is one of the prettiest in Canada, has few industries, but is ideal to live in? It is an ocean port and is named after our most beloved queen.

2. There is another city named after a queen, situated on an island, and the capital of a province. Although this city has only a population of twelve thousand it is by far the largest city in the province. This city's name might lead one to think that it was only a town. Can you spell its name?

3. A very old city with an Indian name is situated on a very wide river. It has seen more battles than any other Canadian city and its great beauty attracts many tourists. A military wall and fortress make it the Gibraltar of Canada. It has over thirty boot factories. You should name this city easily, but be sure you pronounce it correctly.

4. This is also a very old city. It has a magnificent harbour, which is strongly fortified, and which has been visited by more warships than any other Canadian harbour. It ships more goods in winter than in summer, and exports more fish than any other Canadian port. It is named after a British earl, and there is a city in England of the same name. Sometimes when people bother us we wish that they were in that city. Now you can surely guess its name.

5. Now we come to the only important Canadian city that is not on an expanse of water. It is the capital of a province, is surrounded for many miles by very flat land with few trees, and was at one time the headquarters of the North-West Mounted Police. The name of this city means a queen. Now tell me what it is.

6. The person who selected the name for this city won a prize of two hundred and fifty dollars for it. It is small, very rocky, the farthest north and the most rainy of

FIG. 64. PART OF OTTAWA

The building with the high tower is a part of the Parliament Buildings. Government Office Buildings stand on each side of the lawn in front of the Parliament Buildings. What river runs behind the Parliament Buildings? If a man crossed the bridge shown in the picture, what city would he be in?

By courtesy of F. C. C. Lynch, Director, Natural Resources Intelligence Branch, Department of Interior, Ottawa.

FIG. 65. THE HUB OF CANADA

A part of the harbour of Montreal. How are the docks arranged? How many ships are in the dock in the foreground? What is the use of the elevators? Are there railway tracks along the wharves?

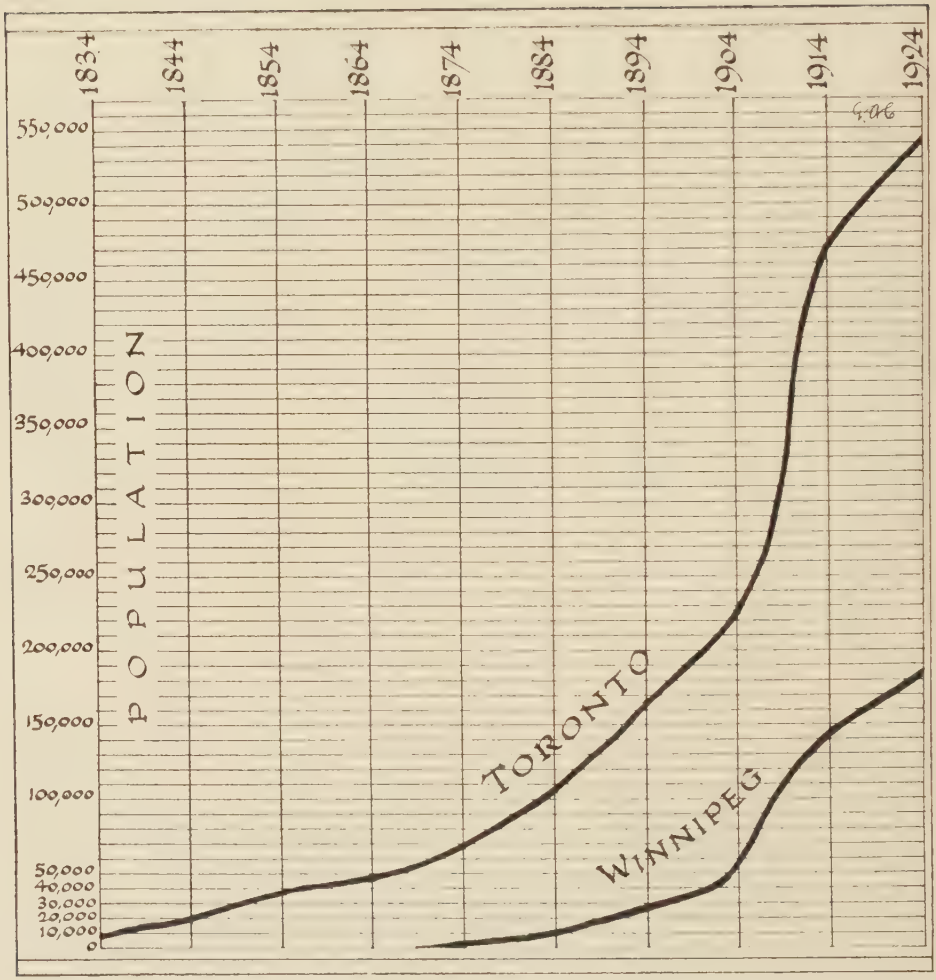


FIG. 66. THE GROWTH OF TORONTO AND WINNIPEG DURING THE LAST NINETY YEARS

What was the population of Toronto in 1834? In 1844? When did it start to grow rapidly? During which ten years did it make most rapid growth? How old is Winnipeg? Which grew more rapidly during the first fifty years of its growth, Toronto or Winnipeg? Which has grown more rapidly during the last ten years? What was the population of each in 1924?

Canadian cities. But it has a splendid harbour, open all the year round, and supplies the greater part of Canada with frozen halibut and salmon. It is nearer to China and Japan than any other port in North America. Guess this two hundred and fifty dollar name.

7. This city, situated at the end of a long lake, is only surpassed in manufacturing by Montreal and Toronto, and has many branches of United States factories. It is close to the greatest source of electrical energy in Canada and surrounded by a splendid fruit-growing district. A city in Scotland and the capital of the Bermuda Islands have the same name. Can you guess it?

8. Can you name the city that stands sentinel over one of the lowest and most important passes across the Rocky Mountains and which also forms the gateway to our chief river emptying into the Arctic Ocean? It has a provincial university, is the capital of the province, though not the largest city.

9. This seaport is not on the ocean but at the mouth of an important river. High tides occur in the harbour. It is more than five times as large as the capital of the province in which it is situated. It has many saw-mills as well as manufactures. It is only the city in Canada that owns its own harbour, and it is named after one of the first persons mentioned in the New Testament. Its name is differently spelt from that of the capital of Newfoundland. Write the names of both.

10. This city is on one of the richest parts of the prairies and is on both banks of the largest river in the Prairie Provinces. It is an important railway centre. It contains a fine university, though it is not a provincial capital. It has the same name as a berry that grows in Western Canada. Guess the name and be sure to spell it right.

11. Can you guess the name of the city that stands near the entrance to a very important pass across the Rocky Mountains? It is prettily set down in the valley and upon the slopes of a branch of the Saskatchewan River. It is the largest city between Winnipeg and Vancouver, and is one of Canada's greatest markets for cattle and horses. It is not very far from the Prince of Wales's ranch. Name the city and the river which passes through it.

GEOGRAPHICAL PEPPER AND SALT

Superior in Canada is the largest lake (area 31,000 square miles); Baikal in Siberia is the deepest (over 4000 feet); Askal Chin on the plateau of Tibet is the highest (altitude 16,600 feet); Tanganyika in East Africa is the longest (450 miles), and Chad in Nigeria is the shallowest, as it is rare to find a part of it more than five feet deep.

The highest tide occurs at the head of the Bay of Fundy in the Maritime Provinces, where it has been known once to rise to fifty-seven feet.

Verkhoyansk in Northern Siberia has the lowest winter temperature of any part of the world (extreme, −90° F.), and Cherra Punji on the southern slopes of the Himalaya Mountains in Assam has the heaviest rainfall (over 600 inches).

CHAPTER X

FIRE! FIRE! FIRE!

THE STORY OF THE FORESTS

A Forest Fire

A little spark. Two young men, after a morning's fishing, have just eaten their lunch and are now sitting smoking on the bank of the stream. It is July. Not a drop of rain has moistened the thirsty ground for four weeks, the grass is burned brown, and the mossy carpet under the trees is dry as dust. The weather is hot, and the sun scorches the forest through a cloudless sky. Just before they jump into their canoe to paddle back to town, one carelessly tosses aside the stub of his cigarette. Is the fire of the stub dead out? There it lies in the dry moss and dead leaves under an old tree trunk. No curl of smoke, no fiery glow comes from the gloom. The fire must be dead out.

If anyone had passed this spot at midnight he would have seen in the moss under the dead tree a little glowing spark no bigger than a firefly. But it was not a firefly. It did not flit from place to place. Its light was red in the darkness.

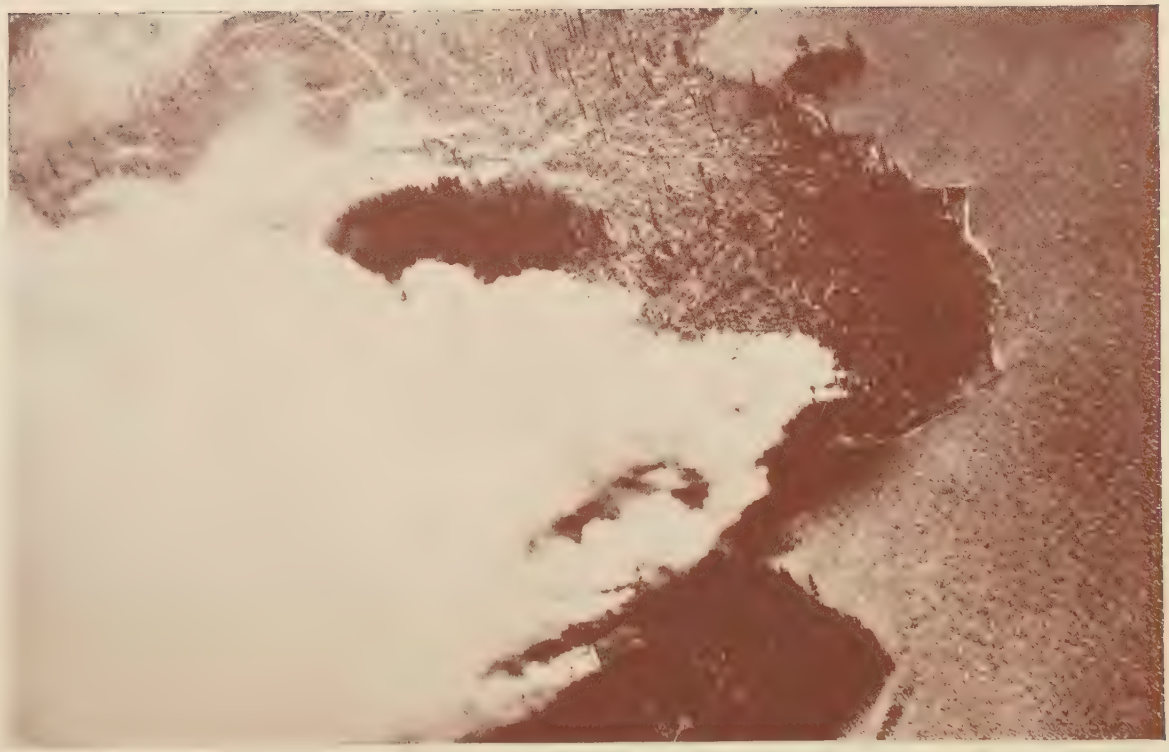
A white plume. It is ten o'clock the next morning. We are six miles farther down-stream. It is hotter than yesterday and the sky is a blinding white blue. Not a leaf flutters, the birds have sought the cool shelter of the woods, and all nature is at rest. What is that long feathery tongue above the forest to the east? We watch it closely. It grows larger. Now it is not straight but bent towards us. The leaves begin to flutter restlessly. There is a gentle breeze rising. We soon know that the white plume is *smoke* and that the forest is on fire. Yes, the cigarette was not out, and the red glow at midnight was not a firefly. That man's folly was a deadly seed that, with lightning speed, is growing to a fearful crop of ruin.

A scarlet tongue. It is noon. The branches are swaying restlessly as the east wind gains force. The white plume has spread across the sky, and now a dark cloud shuts out the sun and already we can smell the smoke. The best trees of the forest were cut down some years ago

By courtesy of Canada Air Board, Ottawa.

FIG. 67. THE HUB OF THE PRAIRIES: WINNIPEG

The magnificent Parliament Buildings are conspicuous. What is the name of the river?



By courtesy of F. C. C. Lynch, Director, Natural Resources Intelligence Branch, Department of Interior, Ottawa.

FIG. 68. LICKING UP THE FOREST

A forest fire as seen from the air. Find the body of water. Why is its surface mottled? In what direction is the wind blowing?

and the logs removed. The branches, called *slash*, were left to dry and decay after being trimmed from the trunk. The scarlet, fiery tongue now licks up these branches like straw, and the flames soon shoot above the tree-tops. Under the slash are the decaying leaves of a hundred years, crisp and dry from the long drought; even the moss and grass have withered and died before the four-weeks' sun. The fire is now penetrating this carpet of the forest. Above this carpet, as dry as tinder, are the gummy branches of the standing trees, made dry by the drought, and containing a big store of resin and turpentine.

A race for life. The wind is blowing the fire straight towards us, and the choking smoke is already in our nostrils. The dense pall covers us with the darkness of night, which is lit up weirdly by the flames, while we rush down the path towards the beach. The frightened birds flutter like crazy things above our heads, and their pathetic shrieks are heard above the roar. The branches crash as a crazed deer or a clumsy bear flees before the scarlet-tongued monster. Rabbits cross our path heedless of man in the presence of this more terrible enemy. But alas! What of the naked little song-sparrows hidden by their mother in the dry grass, the little flickers smothered and burned in the hollow of the dead tree, or the field-mice charred to cinders in the bunch of dry grass beneath the pile of brush? These and a thousand other helpless things are snuffed out before the flames.

The fire leaps forward. Just in time we reach the lake, jump into our canoe, and paddle out of danger.

The mantle of death. The precious rain has been falling for two days. The fire has been quenched, but not before it has swept over a whole township of tall, graceful pine, cedar, ash, and basswood. Trees that for a hundred years have been struggling successfully for life against storms, drought, and disease are killed in a few minutes, and all through the carelessness of one man. If he had only known! But we never know and therefore should always be careful. Magnificent trees, holding their heads erect towards the sky, are now withered and blackened corpses. The slash is gone, the thick black mould that made the earth fertile has been burned to a brown ash. What was yesterday a scene of graceful forms, varying tints of green and brown, light and shade, is now an ugly ulcer on the landscape.

A skeleton fallen to pieces. The trunks of the trees clothed with branches still stood but their life was gone, as the leaves soon withered and one by one were blown away. Next spring showed only

the ghost of a forest. The genial warmth aroused no flow of sap, no burst of buds, and the greenness of the few trees that here and there escaped the fire, only made the desolation more ghastly. The living trunk can laugh at the fiercest storm, but the dead tree soon falls. Now every storm swept down some brittle trunks, until at last the fallen giants were so crossed and meshed, that what had been a forest became a tangled mass of dead logs and dry branches.

A ghastly change. The living tree can be killed by fire but not readily burned. The dead tree is dry. A new fire has broken out in the forest of fallen trees, and every trunk, every branch, and every twig burns with fierce heat. This bakes the soil to peat until it smoulders and burns right to the rock only a few inches below. When this second fire exhausts itself, there is nothing more to burn, and as the smoke clears away, there is revealed the ghastly change. Not only the trunks and branches are in ashes but the soil as well, and a desert of bare rocks is left where once smiled a green forest full of life and motion. One careless toss of a smouldering cigarette stub has blighted a Canadian forest for a hundred years.

Fighting Forest Fires

Canada burned to the bone. Five or six thousand fires lay waste our Canadian forests every year, and forty times every day, during the period of hot weather, the torch is applied to the trees. The roar and crackle of an advancing fire front can be heard every forty minutes during daylight at this time. A strip of smiling forest a mile wide, from the city of Quebec to Vancouver, is swept away every year. For every tree felled by the lumberman's axe, four go down before the forest fire and thirteen million dollars' worth of timber goes up in smoke every year. Nearly one million square miles of Canada was originally covered with forest, and already the hungry demon, fire, has devoured half of this.

Who starts the fires? Nine out of every ten forest fires are due to man's carelessness. Formerly sparks from passing trains spread a streak of waste along the railway, but the number due to this cause has greatly lessened in recent years. Farmers burning slash, smokers throwing away burnt matches and stubs of cigars and cigarettes, and boys and men leaving smouldering camp-fires, are the chief

By courtesy of Forestry and Immigration Branch, Department of Interior, Ottawa.

FIG. 69. THE QUICK AND THE DEAD

Which has been burned over? Why do the trunks fall after a forest fire?

By courtesy of Mr. C. A. Matthews.

FIG. 70. THE "ALLIGATOR"

This boat paddles through the water and crawls over the land. It is used for towing rafts. How is it able to move on the land? Where would it be necessary to move over the land? It is moving through a street near Coboconk, Ontario.

By courtesy of F. C. C. Lynch, Director, Natural Resources Intelligence Branch, Department of Interior, Ottawa.

FIG. 71. THE MONARCHS OF THE WESTERN FORESTS

A stand of western cedar at Haney, British Columbia. What is the diameter of the trees? How does the bark differ from that of the trees in Fig. 25? Are there any branches near the bottom of the trees?

burners of forests. Every true Canadian should take a patriotic interest in our noble trees and should be as careful with fire in the woods as in his own home. A man who sets fire to a house is a criminal and goes to jail, and one who sets fire to a forest should have the same punishment.

Facing the foe. Most boys and girls have seen a fire sweeping across the dry grass in the spring and know how hard it is to control. How much more difficult is a forest fire to fight! There is nothing more terrifying than the rush and crackle of a fire advancing before a steady wind, when the dense smoke makes the noon almost as black as midnight. Yet all over Canada there are hundreds of fire-rangers, who do not hesitate to stand before the advancing enemy and fight him in the face. Until recently the ranger's only method of fighting fire was to beat it down with shovel, axe, and branches of trees.

Towers, telephones, pumps, and aeroplanes. As governments have learned the harm done by forest fires, they have improved the methods of preventing and fighting them. In order that fires may be detected before they make headway, high towers have been erected throughout forested regions, and from the tops of these a constant watch is kept for the first sign of smoke. These towers are connected by telephones with a central office, from which fire-fighters, fully equipped, may be rushed to the point of danger. Aeroplanes now patrol the forests and report by wireless the position and spread of fires. Fire pumps run by gasoline engines are now made so light that they can be carried through the forest, and water can be forced through hose thousands of feet in length. The railways keep special cars laden with tanks of water ready to be rushed to points of danger along the line.

In spite of all these efforts, the camp-fire not put out, the burning match or cigarette stub tossed aside, and the sparks from passing trains, are making fearful havoc with our forests every summer.

Uses of Wood

The world of wood. As I lie in bed I look about my room; the window sash and frame are made of *wood*, and the *wooden* laths hold the plaster firmly. After I have heard my father put *wood* in the fire, I get out of bed and step on the *wooden* floor and sit on my *wooden* bedstead to dress as I pull on my fibre-silk stockings, which are made of *wood*, and then my shoes, which contain a good deal of *wood* in the

heel and sole, I begin to wonder if everything is made of wood. My other clothes, it is true, are of wool and cotton, but the cloth was rolled on *wooden* slats, shipped in *wooden* boxes, and kept for sale on *wooden* shelves. I walk down a polished stair made of *hardwood* and go to the library to see if I can get away from this world of wood. But I have to sit on a *wooden* chair to read the morning paper. The morning paper did I say? Why, millions of tons of *wood* are ground into pulp to meet the demand for paper for newspapers. I see all around me *wooden* shelves, which support great rows of books, the boards in whose covers, as well as the paper in their pages, are composed of *wood* pulp from the spruce tree.

I then step into the kitchen and surely here I shall get away from this substance. The floor is covered with linoleum, which I learn is largely composed of *wood* powder, and I have to strike a *wooden* match to light the gas. This gas, I read, is made from coal, which itself is formed from ancient *wooden* materials preserved in the rocks. Even the castings of the kitchen stove were first formed in the shape of *wooden* patterns.

Now I move to the dining-room. As I sit down to breakfast on a *wooden* chair before a *wooden* table, I look out of the window and see that a fierce storm is raging. Yet all is peaceful around the house and in the lane, for a wind-break of *trees* has been grown by my father. I look in the distance and see a freight train speeding along; the cars are largely made of *wood*, and the steel rails are laid on a foundation of *wooden* ties. I also see the wires along which we telephone and telegraph, and they are supported on *wooden* poles. In my desire to forget all about wood I start the gramophone. But mother tells me that the substance of which the records are made is largely composed of *wood*. When I play on the violin my music teacher explains that it is the elastic *wood* that sends out the musical sounds. I conclude that I cannot get away from the *wooden* world and decide that this substance is even more useful than iron or water, and that this world without wood would not be a very pleasant place in which to live.

Holding up the earth. All are familiar with the uses of wood in the farmer's buildings, implements, and furniture, but few know its important place in the mining industry. Deep down in the mines, as the layer of coal or other mineral is removed, pit props of wood are placed to support the rock above. Timbers also line the shafts, and support the tunnels, that honeycomb the depths of the earth

By courtesy of Forestry Department, British Columbia.

FIG. 72. THE LONE WATCHER FOR FIRES

This is a look-out in British Columbia. It is situated on a high point and is connected by telephone with a central

By courtesy of C. A. Mattheus.

[illegible]. THE FRONT OF A FOREST FIRE

By courtesy of Canadian National Railways.

FIG. 74. THE LOGGING RAILWAY

How many logs are piled on each car? What is the distance across the end of each log? How many cars is the engine pulling? How are the logs prevented from rolling off the car?

By courtesy of Canadian National Railways.

FIG. 75. UNLOADING LOGS FROM A CAR

How many logs are being unloaded at once? Why are they dumped into the water? What is the use of the oblique poles over the railway?

in many gold, silver, nickel, and copper mines. Without these wooden supports, mining would be almost impossible in many parts of the world.

Wood turned into brains. When a piece of wood is rubbed against a rough stone disk it is gradually worn to pulp. A still finer pulp can be formed by soaking wooden chips in a hot chemical solution. When this pulp is pressed or rolled into thin flat layers and dried, it becomes paper such as is used for books and newspapers. Canadian pulp- and paper-mills are the largest in the world, and five million tons of pulp, and 125,000,000 dollars' worth of paper, are manufactured each year. Moreover, this industry is surging ahead at a very rapid rate.

When we consider what a great part of the world's knowledge is spread by books, magazines, and newspapers, the part Canada plays in educating the world can be readily seen. It may be truly said that Canadian logs are being turned into the world's brains.

From logs to legs. Man, great as he is, can learn much even from lowly worms. The silkworm eats the leaves of the mulberry tree, changes this food into a sticky liquid which, through fine tubes on its head, it forces out as threads. These harden to form the shiny silk fibres from which so many beautiful garments are made. Man has been able to copy this humble caterpillar. He now can take the beautiful white pulp made from the wood of the spruce tree and, by mixing it with chemicals, convert it into a clear, sticky liquid like the one in the silkworm's head. He then forces this through small glass tubes or fine pin-holes in metal, and out come the beautiful threads of glistening silk. The lustre of this artificial silk is more brilliant than that of the natural fibre, but it is not so strong or flexible. However, as it is much cheaper, many persons who before its discovery could not afford silk dresses or silk stockings, can now wear these fibre-silk garments, which rival in lustre and beauty the silks worn by the wealthy.

Forests as sponges. The warm rays of the sun in spring soon turn the snow in open places to water, which swells the streams to torrents; but the rays are greatly weakened by the leaves and branches of the forests; snow melts there more slowly, and gives its water gradually to the streams. Further, the soil of the forest is more spongy than that of open spaces. Rain falling on this spongy soil is eagerly absorbed and oozes away slowly and steadily throughout the year to the stream. On cleared land the rain runs off quickly and is led away by tiling, ditches, and drains to the streams, causing floods. Soon all the

rainfall has been drained away and the river shrivels to a mere thread of water, or dries up altogether. As the forests are being rapidly cleared, the floods of spring are becoming more harmful and the flow in summer and autumn less and less.

While this uneven stream is harmful for transporting goods on the rivers, it is ruinous for water-power. To-day, rapids and falls in many streams of Canada are used to make electricity, which runs our mills, factories, and street-cars, and gives us light and heat. As a steady current of electricity is necessary for this purpose, it is important that the flow of water should be nearly the same at all seasons. Our great mills and factories are therefore crying out just as loudly as our mines and farms, that the forests should be saved from destruction.

Forests of the World

Canada's forests and farms. We are proud of Canada's great farm production, but do all know that the land of more than two-thirds of each province is unfit for raising crops, but well suited for growing trees? Even in the Prairie Provinces this is true. Just think what a wonderfully wealthy country we could have, with from one-third to one-fourth of each province covered with well-tilled fields of grain and roots, and almost all the remainder clothed with beautiful green forests, from which are taken each year millions of logs.

A naked world. Many centuries ago, before man began to destroy the trees, almost one-fourth of the land surface of the world was clothed with stately forests. Long ago China began to lay bare her nakedness by stripping off her trees to cultivate the soil. England, France, Germany, and the states on the Mediterranean Sea, followed her example; but France, Germany, and Italy have replanted waste land with trees, and have again covered many naked spots with a green mantle. In North America, the United States and Canada have not been satisfied with cutting their trees recklessly but have also applied the torch and have burnt more than they have cut.

There is great danger that the world may be stripped almost naked of her trees. To-day only a few countries are able to produce more lumber than they require for their own use. The chief of these are Canada in America; Sweden, Russia, Finland, Norway, Jugo-Slavia

By courtesy of F. C. C. Lynch, Director, Natural Resources Intelligence Branch, Department of Interior, Ottawa.

FIG. 76. TOOK TWO HUNDRED YEARS TO GROW, ONE HOUR TO DESTROY

Winter scene in Northern Ontario. On which side are they using the cross-cut saw? What has first been done on the opposite side? How deep is the snow? Compare the stand of timber with that in British Columbia as illustrated in Figs. 25 and 71.

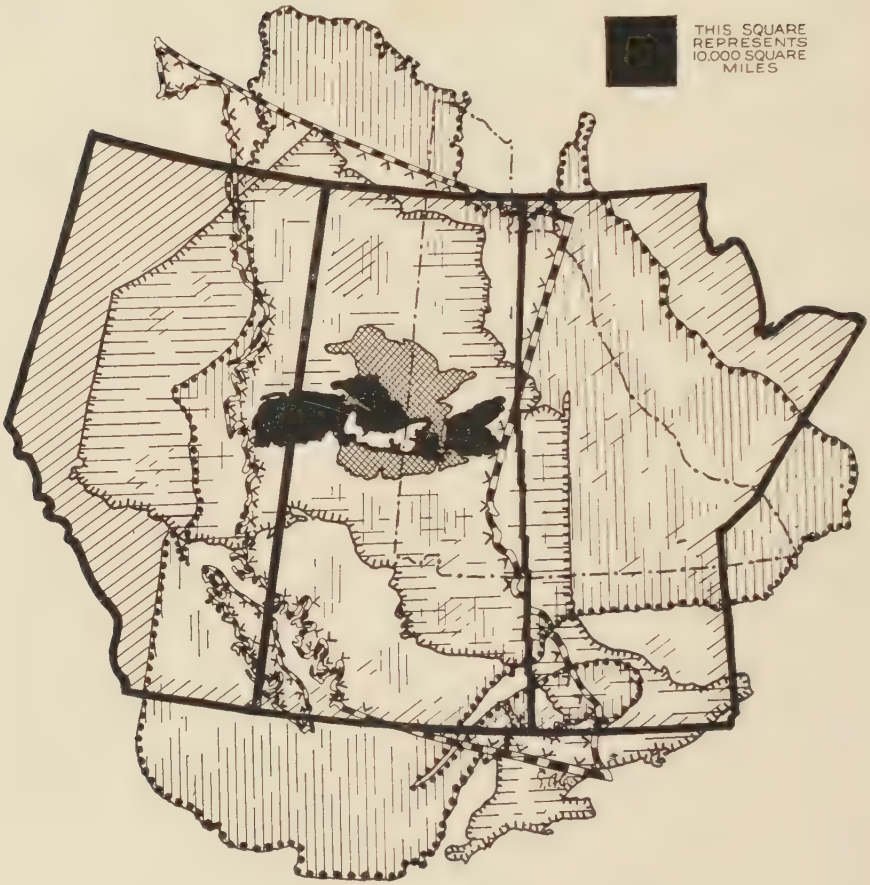


FIG. 77. A PUZZLE MAP OF THE PROVINCES OF CANADA

Study on the map of Canada in your Atlas the shape of each province. Find the three Prairie Provinces in the puzzle. Next find Quebec, Ontario, British Columbia. Which province is black? Which is white? Which is cross-lined? By comparing New Brunswick with the black square in the upper right-hand corner estimate its size. What is the area of Nova Scotia and of Prince Edward Island? How many square miles are there in Saskatchewan? Compare in size the three Prairie Provinces. How does Ontario compare in size with Alberta and Saskatchewan together? Which is larger, British Columbia or Saskatchewan? How does Quebec compare in size with the three Prairie Provinces together? Write down the names of the provinces in the order of their size, beginning with the largest. There is another of the great divisions of Canada shown on the map; but it is hard to find. Search for it, and by comparing its shape and size with the divisions shown on a map of Canada, find its name. Find the coast of Hudson Bay in three, and the Ottawa River in two, places on the map.

(ū-gō-slav'i-ä), and Czecho-Slovakia (chek'ō-slō-vak'i-ä) in Europe; and Japan in Asia. Of these, Sweden and Canada lead. All the other important countries have to import lumber, and some of them in great quantities. In time these importing countries will make great demands on Canada, Russia, and the other exporting countries. Canada will be tempted to cut too deeply into her forests in order to meet these demands, and will be in danger of becoming as naked as China and Western Europe. As wood is the most useful of all materials, the greatest care should be taken to conserve our forests both from over-cutting and also from wasteful fire.

GEOGRAPHICAL PEPPER AND SALT

The highest point in Southern Ontario is the village of Dundalk (1704 feet) and the highest point in Northern Ontario is Tip-top Hill (2120 feet), north-west of Lake Superior.

British India, South Africa, Germany, and Nigeria is the order in which the countries stand in the rearing of goats.

When you sprinkle your meat with pepper do you ever think that the seasoning probably comes from the Dutch East Indies?

When you pull a cork from a bottle the chances are three to one that the light stopper came from Spain.

Germany is the greatest importer of iron ore and France is the greatest exporter.

Most Canadians will be surprised to learn that the average size of a family in Quebec is about five including the parents; in Ontario it is nearer four.

A larger proportion of the people of Ontario can read and write than in any other province, and a smaller proportion in New Brunswick.

The United States uses two-thirds of the exported raw silk, and Paterson, New Jersey, is the largest manufacturer of silk cloth of any city in the world.

France is the greatest manufacturer of wine, and the French people are also the heaviest drinkers of wine.

Very few know that Melville near the coast of Labrador is the largest lake in Quebec.

CHAPTER XI

THE WORLD'S LAST GREAT SAILORS

FISHING ON THE BANKS OF NEWFOUNDLAND

The fishing-grounds. The coast of Nova Scotia, New Brunswick, and Newfoundland is an embroidery of islands, capes, and bays (Map 21 in Atlas). Swarming in the meshes are the plants and small animals on which fish feed. Farther out, at a distance of fifty to one hundred miles from the coast, rise platforms over which the sea is shallow. These *banks*, as they are called, are the feeding-grounds of the largest schools of cod, halibut, haddock and hake that the sea can boast.

Thousands of men all round the coast, who go out each day in their motor-boats to catch fish in the inlets or near the coast, are called the *inshore fishermen*; while those brave, dogged men who grimly sail out to fish on the Banks, there to be buffeted by wind and wave, are called *deep-sea fishermen*.

The Grand Bank, extending along the south of Newfoundland, is the most productive of all fishing-grounds. Here for four hundred years these daring sailors have steered their little ships from Newfoundland, Nova Scotia, the United States and Europe to capture the prizes of the sea.

The inshore fisheries. Little fishing villages are to be found in every inlet along the coast of the Maritime Provinces. The methods of fishing differ with the kinds and habits of the fish caught. Traps for lobsters are set in shallow water throughout the season, and are raised once or twice a week. Mackerel are captured in trap-nets along the shore or in immense seines (p. 26) in open water. Oysters are scooped up by hand dredges on the end of a pole in the few places where they have not been exhausted. Young herring are taken in immense numbers in the Bay of Fundy and packed in tins to be sold as sardines. Cod, haddock, and halibut are either caught by hook and line or trawls in the same way as on the Banks (p. 128).

Lunenburg fishermen. Over one hundred and fifty years ago a band of sturdy exiles from Germany settled along one of the little inlets on the coast of Nova Scotia, which they called

By courtesy of Massey-Harris Company, Toronto.

FIG. 78. THE HUNTER'S RETURN

What season of the year is it? The forests are useful for timber and attract thousands of hunters every autumn.

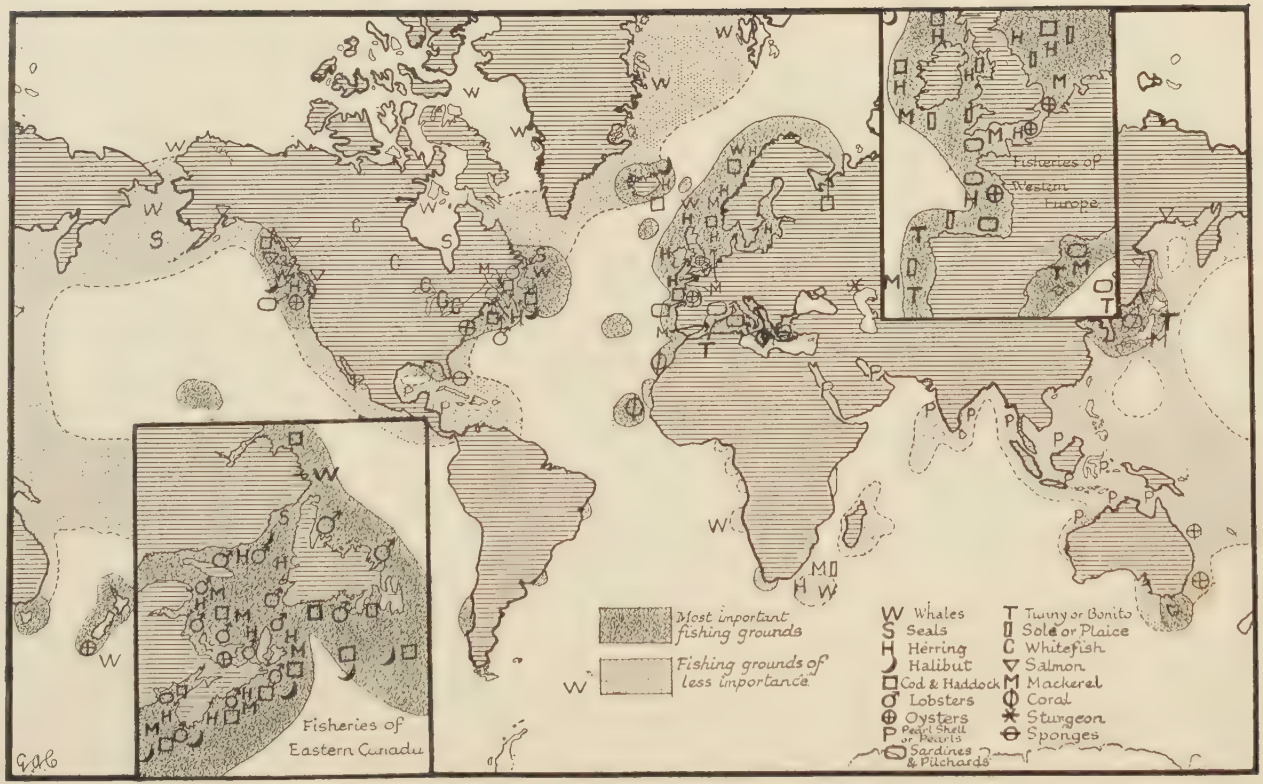


FIG. 79. THE HARVEST OF THE SEA

Find out from your parents or from an encyclopædia the appearance of the animals listed on the map. Where are the four most important fishing-grounds? What country borders two of them? From Map 1 in Atlas find the depth of water on the four chief fishing-grounds. Name the chief fishes caught on the east coast of Canada, on the west coast, around the British Isles, around Japan, and in the Mediterranean Sea. What fish are caught along the coast of Spain and Portugal and France? The world's supply of sponges comes from what two regions? Name four regions from which oysters are obtained. Does the pearl oyster grow in warm or cool water? Locate the chief whale fisheries. At what two regions are seals obtained? Where is the great sturgeon fishery? Where are the chief salmon fisheries?

Lunenburg (loo'-nen-bérg) Bay (Fig. 81). The quiet waters of their land-locked harbour invited these brawny, courageous men to the sea. To-day the bulk of the Canadian fishing fleet for the Banks of Newfoundland sails forth from this little port.

The fishing schooner. Before the fishing season opens the harbour of Lunenburg is dotted with strong, wooden, two-masted fishing schooners. These boats (Figs. 82 and 83), with their sails as white and stiff as marble, present a beauty of outline and a bird-like grace not surpassed by any other ships. Yet they are built entirely by the handy fishermen who own and sail them.

Let us take a trip on one of these fishing schooners to the Banks of Newfoundland. The crew of twenty-two consists of the skipper, a man of skill and judgment; the cook, whose art in the kitchen keeps all the men in good humour; and twenty fishermen, two for each of the small boats.

As we step down the steep stairway at the front of the deck we find ourselves in a room with sleeping-bunks on both sides; behind this is the dining-room, none too large for twenty men. At the back of the ship is a cabin in which the captain has his quarters. Stoves keep these rooms comfortable and are necessary to dry the wet clothing of the men.

The dories. As the ship steers her course to the Grand Bank let us look over her equipment. Ten small boats called dories fit within one another like a nest of berry-boxes. To the landsman these wonderful little structures appear as unsafe as a birch-bark canoe; yet a skilful fisherman can row and sail one through the roughest sea, even when loaded with fish to the water's edge. Often when they get separated from their schooner in a sudden squall the fishermen will reach land, one hundred and fifty miles away, in this staunch little craft.

The fishing-gear. At last we approach the fishing-grounds and the gear is got ready. Long lines of very strong cord, called *trawls*, have pieces thirty inches long, called *snoods*, spliced in every three feet. At the end of each snood is a strong fish-hook. As each hook is baited, the line is coiled in a tub.

Finding the fishing-grounds. The skipper does not fish haphazard but always selects a ground that past experience has proved to be productive. There is no land in sight. How can he find the ground? The sounding-lead, which is his third eye, is a metal cylinder, the hollowed bottom of which is covered with tallow. He lowers this

to find the depth and also, by examining the mud adhering to the tallow, to learn the character of the bottom. By two or three soundings his experienced eye tells his position, and he goes directly to the fishing-ground.

Thirty thousand baited hooks. Three or four tubs of fishing-gear are now loaded into each of the dories, which are swung out over the side of the schooner, each manned by two fishermen. One small boat is let free at every half-mile, and immediately the long trawl is let out by one man while the other rows. Attached to the two ends of the trawl are anchors, which keep it stretched along the bottom, and small barrels which float on the surface to mark its position. Thus when the ten trawls are all out, they are spread over an area five miles long and more than two miles wide. Every line offers three thousand choice morsels to cod, halibut, haddock and hake, but behind every piece of bait lies hidden a treacherous hook.

Some marvels of the sea bottom. After several hours, the strenuous work of lifting the trawl begins. One fisherman in oilskins, standing in the bow of the dory, tugs in the line over a pulley and shakes off the fish into the boat; the other removes the bait and coils the trawl in the tubs. Some wonderful objects come up on the trawl. First a fine codfish over three feet long is pulled over the side (Fig. 84). A little later the fisherman knows by the heavy dead weight that a large lumbering fish is coming; its outline can now be dimly seen; it is as broad and flat as a door. As it appears at the surface the fisherman shakes it off in disgust, for it is only a barn-door skate, which is of no value. Then cod after cod comes up in quick succession. Sometimes a beautiful purple and red starfish is attached to a hook, sometimes a sea-strawberry, which looks not unlike a large red fruit, but is really a sea animal. Frequently what appears to be an ear of corn is brought to the surface, but in reality it is the clustered eggs of a sea-snail. But often the fisherman utters an oath as he brings to the surface a graceful fish, steel-blue above and pure white beneath. When he tries to release the hook from its wiry mouth, the creature squirms and pierces him with sharp hidden spines, which bristle from its back like bayonets. This is the dogfish, cursed of all fishermen, not only for its murderous spines, but also because it eats the other fish from the hooks, and tangles and bites in two the trawl.

The catch. The last anchor has been lifted, the trawl-line is all coiled neatly in the tubs, and the dory is loaded to the water's edge

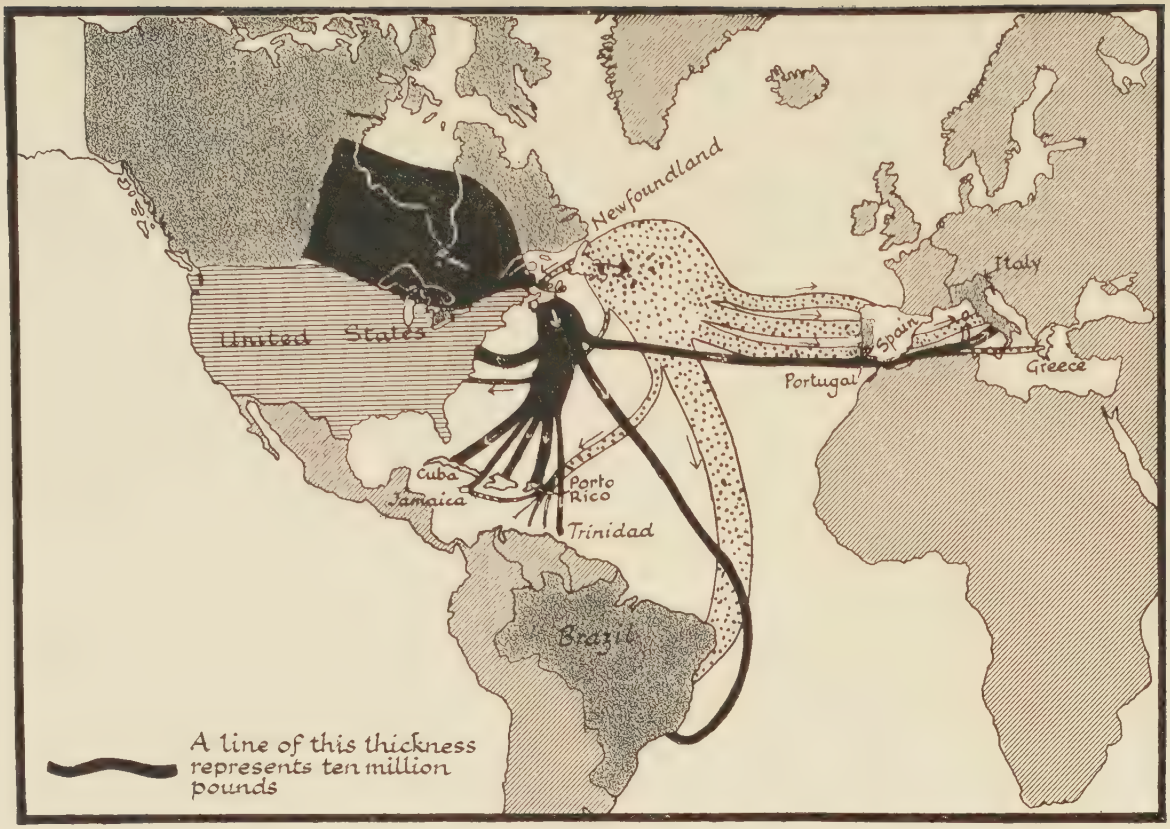
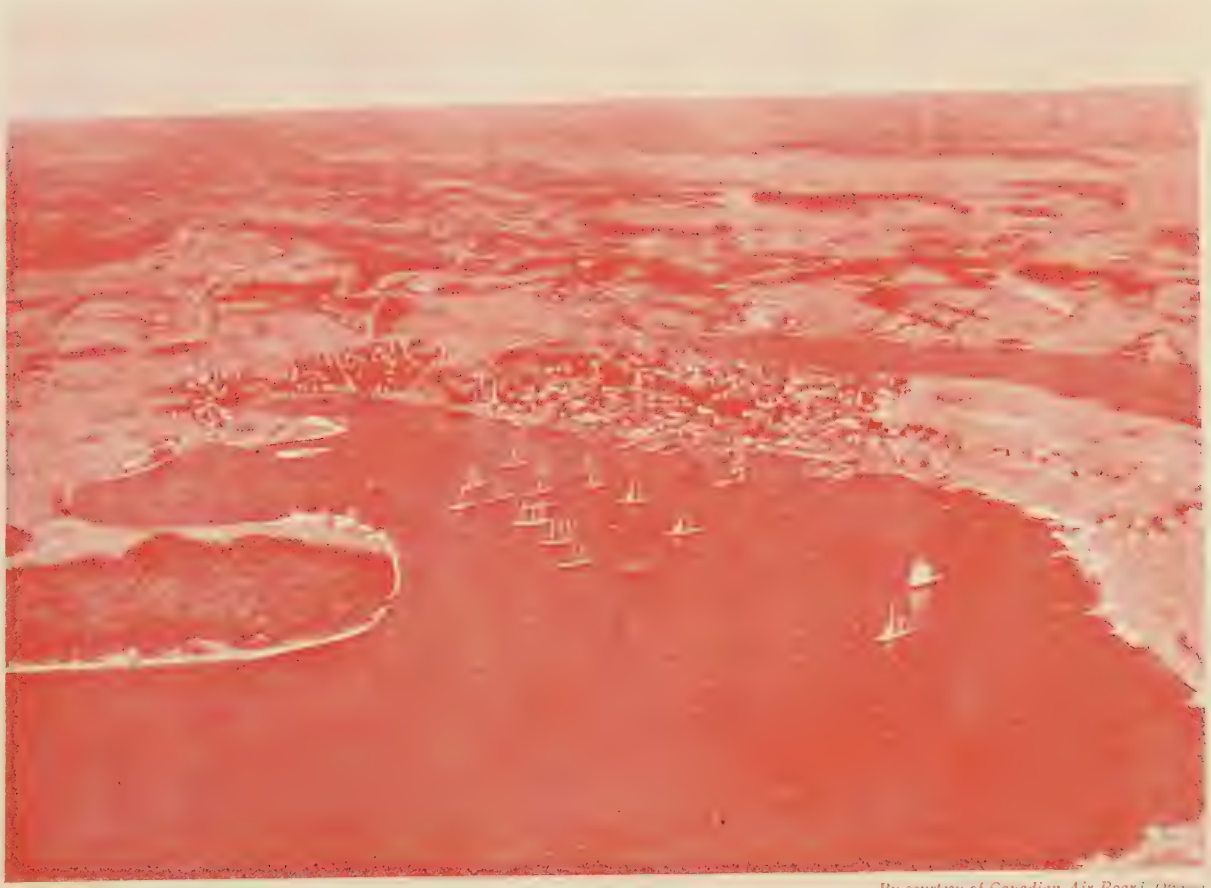


FIG. 80. CANADA'S CODFISH IN EVERY CLIMATE

The black represents the distribution of Canadian codfish, the dotted of Newfoundland codfish. What part of Canada's codfish is used at home and what part is exported? To what country does Canada export most? To what European country does she export largely? Name the West Indies that are large importers of Canadian codfish. Estimate the amount exported to each. What is Canada's chief customer in South America? Which exports more, Canada or Newfoundland? Which exports more to the United States? Who is Newfoundland's best customer? Who are her best customers in Europe? What is the religion of the countries to which both Canada and Newfoundland export? What has the people's religion to do with the import of fish? Are the codfish shipped to the West Indies, Brazil, and Southern Europe, fresh or dried? Give a reason for your answer.



By courtesy of Canadian Air Board, Ottawa

FIG. 81. A SNUG FISHING TOWN: LUNENBURG

How many fishing schooners are there in the harbour? How many masts has each schooner? Why are the boats all pointing in the same direction? Describe how the wharves run. What signs are there that the adjacent land is not fertile?

with its slimy harvest of cod, haddock, and hake. The little boat rides the high waves like an egg-shell as the fishermen row to the schooner. The skipper counts the fish as they are pitched on the deck. The men watch the count just as eagerly, for their monthly wage depends upon the amount of the catch of their dory. As boat after boat is unloaded, the rising tide of wriggle and slime covers coils of rope, boxes and barrels, and the men stand knee-deep in the slippery mess.

Though the men are tired, the fish have all to be gutted, washed, and packed in ice, or salted in the hold of the vessel. When they are packed in ice, the schooner returns to port in about ten days in order to dispose of the fresh fish. When the fish are packed in salt, the boat may remain on the Banks for six weeks, till a full cargo is obtained. Then it returns to port, and the salted fish are spread in the sun to dry. Streets, yards, and wharves of Lunenburg, Halifax, Canso (kan′-sō) and many other fishing towns have, throughout the summer, acres of platforms covered with codfish drying in the sun (Fig. 86).

Dangers on the Banks. Such is the routine of the deep-sea fisheries. But it has many dangers. Often when the dories are busy setting or raising the trawls, a damp south-east wind from the Gulf Stream (Fig. 85) blows in a bank of fog as dense as wool. Though the eye cannot pierce fifty feet, the dory is five miles from the schooner. As the treacherous fog may persist for days, winds and currents often carry the little boat far from the fishing-grounds. As each dory carries only a small quantity of fresh water and food, the danger of starvation is real. Sometimes, as the brave little fishing schooner beats her way through fog and gale, a great ocean liner suddenly looms up like a ghost in the gloom and breaks her like an egg-shell. The gales that often sweep suddenly in are the worst enemies, and every autumn in the Maritime Provinces there are vacant places in many fishermen's homes because of the little dories that never returned to the schooner.

A long journey. Autumn has come. The season's fishing is over, and the schooners throng the snug harbour of Lunenburg. All is great bustle and excitement. The fish, now dry and packed, have been stowed away in the hold, and the fishermen are bidding farewell to their families, for they are about to start on a long and trying trip. They are going to deliver their season's catch to the West Indies, or Brazil (bra-zil′) nearly five thousand miles away.

Through the westerlies. Out of the harbour on to the broad Atlantic each schooner sails with a fair wind. Bubbling water makes

away from her graceful rounded stem, and her bellied white sails gleam in the sun. She is headed proudly for the south and is crossing the region of *westerly winds* (Fig. 85). Though west winds prevail, gales are liable to hit her from any quarter. The water is cold, for she is in the branch of the Labrador Current (Fig. 85) that flows south along the coast. In a few days the weather becomes wintry. For many hours a driving gale dashes salt spray over the deck and sails, and soon the ship becomes enshrouded in ice. The howling wind and biting sleet mock the seamen's strength, and set at naught their skill. Snow and ice weigh down the ship, and the crew, freezing and exhausted, are hardly able to make her obey her helm.

The magic of the Gulf Stream. But in a few hours a sudden change gives them hope. They enter the *Gulf Stream* (Fig. 85). This great Amazon of the ocean sweeps on more water than all the rivers of the land. It carries the tepid waters of the Gulf of Mexico almost to the coast of Newfoundland. Its deep indigo blue is markedly different from the light turbid green of the ocean water that forms its bank and bottom. The line of contrasting colour tells the shivering sailors that their schooner has entered this stream. In an hour she has passed from the depth of winter into water of summer heat. Ice and snow fall away as though melted by some invisible stove, the sailors bathe their frosted limbs in the warming waters, and gloom gives way to gladness.

The horse latitudes. We have now reached the latitude of Florida (Fig. 85). Up till now, though the winds have been variable, they have never been absent. Now they steadily weaken, the sky becomes clear, and the air dry and invigorating. At last the wind drops entirely, and the sails flap limp in the stagnant air. Day after day the ship lies becalmed like

a painted ship upon a painted ocean.

We are now in the *tropical calms* or *horse latitudes* (Fig. 85). In earlier days sailing vessels, loaded with horses for the West Indies, were often delayed so long here that the animals died of thirst and had to be thrown overboard. So this belt was called the horse latitudes.

A meadow floating in the ocean. As we seize every breath of air to carry our ship to the south a new difficulty arises. Even when we were in the Gulf Stream, matted masses of greenish-brown seaweed went floating past. Now the tangles become worse and look like

By courtesy of Mr. C. A. Matthews.

FIG. 82. A FISHING FLEET IN THE MARITIME PROVINCES

By courtesy of F. C. C. Lynch, Director, Natural Resources Intelligence Branch, Department of Interior, Ottawa.

FIG. 83. A FISHING SCHOONER STARTING FOR THE GRAND BANK

About how long is the ship? How many masts has it? How many sails are on each mast? How many men can you count on the ship?

By courtesy of Mr. C. A. Matthews.

FIG. 84. FISHING ON THE BANKS

This shows the old method followed for hundreds of years. The fishermen used lines and fished from the deck of the schooner.

floating meadows on the bosom of the ocean. The schooner finds great difficulty in forcing her way through these clotted networks that seem firm enough to walk on. The weeds teem with living creatures of strange shapes and startling brilliancy. Fishes, of exquisite beauty, flash through the meshes as they feed on the small creatures living on the weeds.

The sailors now know that they are in the *Sargasso* (sär-gas′-ō) *Sea*, well known since Columbus's small ships, during his first voyage, became almost entrapped in its treacherous grip.

The steadiest winds in the world. After two weeks' struggle southward through calms and tangles of weed, the schooner begins to feel the strength of the *trade-wind* (Fig. 85). Within two days she is in a new world. The uncertain, boisterous winds of the North Atlantic are left far behind. Now winds blow with genial steadiness day after day and week after week; this gives a uniformity of weather that needs no forecasts. It is usually fine, and the sky is covered with patches of fleecy clouds, but there is no rain. Though the temperature is high, the air is dry and not depressing.

A belt of cloud that encircles the earth. Before the Equator is reached, the north-east trade-wind begins to weaken, the sky becomes more cloudy, and the air hot and humid. At last the wind sickens and dies, and the schooner is held up in the *doldrums* (Fig. 85). This belt of calms, where the north-east and south-east trade-winds meet, stretches right around the world. It is much dreaded by sailors, for in it a ship may lie for weeks on the hot, smooth water under a leaden sky, with pitch oozing from the decks. It is a region of unbearable calm broken by violent squalls, torrential rains, and fearful lightning and thunder, while the muggy, hot air gives one a feeling of unconquerable weariness. But for the awning of the ship and the little air put in motion by the flapping of its sails, the heat would be almost insupportable.

In the south-east trade-wind. After two weeks' struggle in this place of torment, the schooner at last crosses the Equator. The breeze from the south-east begins to freshen, bringing with it clear sky and equable temperature, so that the plague of the doldrums is soon forgotten, and cheerful faces replace the sleepy sluggishness that had weighed down the crew. We are now in the south-east trade-wind. In ten days this wafts us into the magnificent harbour of that wonderful city—Rio de Janeiro (rē′ō de zhä-nā′rō).

QUESTIONS

1. A lady wears a coral necklace and a brooch set with pearls. From what countries did these articles probably come? (Fig. 79.)

2. Ambergris, caviar, trepang, dulse, sepia, pearl, coral and Tyrian purple are products of the sea. From the dictionary or encyclopædia, find out what each is, where it is obtained, and for what it is used.

3. When ladies in certain parts of Brazil give an afternoon party, they tell the guests to come before or after the thunderstorm. Do they live in the doldrums or the trade-wind belt?

4. In which direction across the Atlantic do ships follow the Gulf Stream?

5. Find the names of all the fish to be bought in a shop. Which are fresh? Which salted? Which canned? From labels on cans and boxes find out whence the fish came.

6. What is a finnan haddock? Look in the dictionary for the derivation of the name.

7. The chief fishing towns in Western Canada are Prince Rupert, Vancouver and New Westminster; in Eastern Canada, Halifax, Lunenburg (loo'-nen-bérg), Yarmouth, Canso and St. Andrews; in the United States, Gloucester (glos'-ter) and Boston; in Great Britain, Aberdeen, Grimsby (grimz'bi), Hull and Yarmouth; in Norway, Bergen (ber'-gen); and in France, Boulogne (bool-on') and St. Malo (ma-lō'). Find these towns in the Atlas, and from Fig. 79 tell what fish are landed at each.

FIG. 85. A SAILING TRIP FROM LUNENBURG TO RIO DE JANEIRO
Name in order the regions through which the ship passes.

By courtesy of Mr. F. C. C. Lynch, Director, Natural Resources Intelligence Branch, Department of Interior.

FIG. 80. DRYING THE CODFISH

Notice the platforms on which the codfish are drying. How are these constructed? How is the dried codfish carried? What are the men doing with the dried fish?

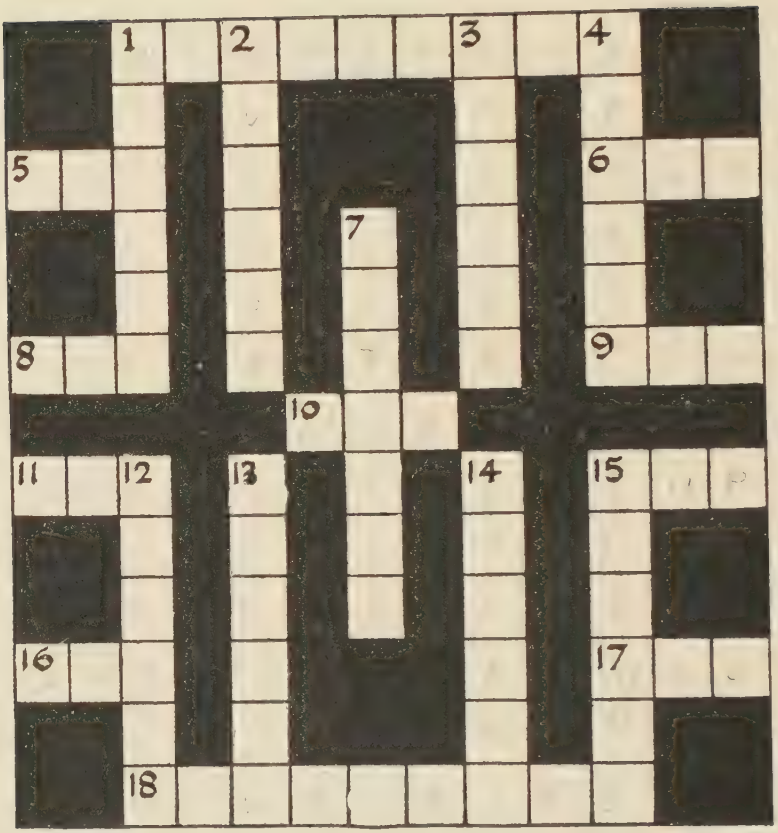


FIG. 87. A CROSS-WORD PUZZLE OF CANADIAN GEOGRAPHICAL NAMES

Horizontal

1. A large lake and river in Northern Alberta. 5. A small badly-named island just south of Baffin Island. 6. The most valuable fish caught on the banks of Newfoundland. 8. The first three letters of the second largest city in Manitoba. 9. Abbreviation for our country. 10. Abbreviation for one of the Prairie Provinces. 11. The most valuable product of Northern Canada. 15. First three letters of the name of Canada's largest lake. 16. Abbreviation for largest province in Canada. 17. Abbreviation for country south of Canada. 18. The zone in which is the greater part of Canada.

Vertical

1. A district in Northern Ontario, north-east of Lake Superior. 2. A very large bay in Northern Canada. 3. The largest city in New Brunswick. 4. An ocean north of Canada. 7. The most populous province in Canada. 12. The last word in the name of the most northern ocean terminus of a transcontinental railway. 13. The name of a valuable evergreen tree in Canada. 14. The capital of Canada. 15. The tree that produces most lumber and pulp in Canada.

CHAPTER XII

ACROSS THE UNITED STATES BY AEROPLANE

The gem of the United States. Turn to your map of the United States and find its capital, Washington, for it is there that we are being strapped into the observation chamber of our aeroplane to look down like a bird as we skim across the United States and back. The graceful lines of the beautiful city take form as we ascend. The shining white Capitol, or parliament buildings, is the hub, and broad avenues bordered by graceful trees branch out like spokes. Threading its way through the city is the swift Potomac (pō-tō′mak) River, which can be traced back to the Blue Mountains in the west. Even before this stately city was born, it was bounded and planned by George Washington, the first president of the United States. Viewed from our high perch, magnificent government buildings seem to stand everywhere. Solemn marble monuments to their greatest presidents, Washington and Lincoln, glisten in the sun. But there are few chimneys and little smoke to foul the blue of the sky. This, the handsomest of American cities, has few manufactures and little commerce. Its half-million people are largely engaged in carrying on the government of the vast country with its swarming population, its unequalled resources, and hustling business.

Flats and sharps. Our trip north from Washington reveals the three parallel bands of the Eastern United States, each stretching like a ribbon from north-east to south-west. A gentle plain as smooth as the sea, save where cut across by rivers, borders the coast of the Atlantic Ocean. Next a rougher region rises abruptly from the coastal plain, and every river tumbles in a cataract as it passes from one region to the other. On this rougher band, called Piedmont, foaming white spots, scattered here and there on the sparkling lines of water, reveal rapids in these parts of the rivers. On the west beyond Piedmont rises the regular line of the Blue Mountains. We leave behind us great city after great city as we speed north. First Baltimore appears, then Philadelphia, and finally New York. It can be seen that the two

former cities, and many others of lesser size, are along the line where the rough Piedmont suddenly drops to the coastal plain. Each city is spread out at the foot of a waterfall, which supplies power to run the great factories seen everywhere. Steamers plying on the rivers across the coastal plain make every city an ocean port. The waterfall creates factories, the navigable rivers make commerce. Baltimore, as large as Montreal, is the world's greatest shipper of oysters. These are dredged from Chesapeake Bay, which can be seen as a blue arm of the sea to the east. As we proceed northward, great ocean steamers, looking like flies on a table, can be seen creeping up the river, which to the south widens into Delaware Bay. These steamers unload their cargo at the old city of Philadelphia.

All the world in one city. As our humming aeroplane advances to the north, towns become larger, more numerous, and closer together, until at last they all blend into one great, throbbing swirl of streets, houses, and factories. We know that we are now above the city of New York, the city of sky-scrapers, the pulse of the Western Hemisphere, the second largest city in the world. In Fifth Avenue palaces below us are housed the largest group of millionaires on the earth, while in the great, dingy, box-like, tenement houses in the slums are hived the most motley mixture of human beings the world possesses. Every nation under heaven has poured its quota into this vast melting-pot. There are more Jews than are found in Jerusalem, more Italians than are found in Rome, more Irish than in Dublin, and more Germans than in Cologne (kō-lōn′), Munich (mū′nik), or Leipzig (līp′tsig); it has Polish centres, Greek centres, Czech (chek) centres, Magyar (mag′yar), Russian, Armenian, Syrian, and Rumanian centres. Its wealth is almost fabulous. In its business heart at Manhattan Island are packed almost half a million on every square mile. Land is so dear that great sky-scrapers, thirty and forty storeys high, border the canyon-like avenues. Tens of thousands of people swarm out of a single building into the street. To carry such crowds not only have railway tracks been built on and above the streets, so that railway trains rattle past your third-storey window or over the tops of houses, but also there are three underground tunnels one below the other, and yet the crowds cannot be quickly moved to their homes. As we gaze down on this human beehive we try to find what magnet has drawn the world to New York. Lying to the east is a well-protected harbour in which ships swarm like sparrows on the road. The greatest liners, floating

By courtesy of Chief of Air Force, Washington, D.C.

FIG. 88. THE GREATEST COLLECTION OF GIANT BUILDINGS IN THE WORLD

This is an air picture of the business section of New York City. Battery Park with the round aquarium stands in

By courtesy of Chief of Air Force, Washington, D.C.

FIG. 89. AIR VIEW OF NEW ORLEANS
What is the name of the river?

palaces, carry passengers to and from every port; and tramp-ships, loaded to the water's edge, have stowed in their holds every product that grows on the earth, every creature that swims in the sea, and every article wrought in the factory. One hundred and twenty millions of the greatest hustlers in the world are feverishly digging minerals, raising crops and animals, cutting forests, and making articles of every kind, from beads to bridges, and shipping them to every nation, and almost half of the exports crowd through this great port. But these hundred and twenty millions of the freest spenders buy from every country, and over one-half of these imports pass through the narrow throat of New York City. Far to the west, in a hazy blue line, frown the ramparts of the Appalachian (ap-a-lach'i-an) Plateau, forming a wall between the coast and the interior. Not a break can be seen along its continuous height. In the north it curves away to the east.

Cities like a string of beads. The whole coast seems hemmed in, but as we look carefully from our aeroplane we see a clean furrow ploughed through this frowning, rocky barrier. Through this furrow threads a streak of blue water, which empties into New York Harbour. We have found the secret of this city's greatness. It is this Hudson Valley, the gateway between the interior and the coast. As we turn northward along this valley we find it streaked with railways, and a steady procession of trains, which look like lines of little black boxes, pulse along its length day and night throughout the year. The cities and towns along the banks of the river are so close together that it looks like one elongated necklace of factories, streets, and houses. At Troy it leaves the Hudson River and turns west into the Mohawk Valley, through which runs the Erie Canal, the largest and one of the oldest in the United States. Below in this fibre of water is a continuous procession of barges. The necklace of towns continues. What goes on in this five-hundred-mile necklace, each bead of which is a busy town? The canal and river navigation started them, electrical power from Niagara and other sources has given them new life. Each town has its special work. Nine out of every ten men in the United States wear a collar made in Troy, one-half of all the gloves that decorate the hands of American ladies are made in the homes of Johnstown and Gloverville workpeople. In the United States every second handful of soda put into the boiler to soften the water, and every second spoonful of soda put into dough to make it rise, is made by electricity in Syracuse from the salt beds that underlie the city. Over one-third of

the workers of Utica (ū'ti-kä) are knitting stockings, underclothing, and sweaters. Three-quarters of Schenectady's (ske-nek'ta-di) bread-winners are engaged in the General Electric or American Locomotive works. Buffalo, at the west end of the line, is a funnel through which pour wheat, corn, oats, and other products of the west from large lake boats into Erie Canal barges. Her immense grain elevators and miles of docks are evidence of shipping which is greater than that of Liverpool.

Cities belching fires. From Buffalo we wheel south to the Appalachian Plateau just as the darkness of night approaches. Glowing flames widely scattered in the distance catch our eyes. Are the forests on fire? No, there are few signs of trees. As we approach we are amazed to find that each patch of fire is a town with flames belching forth from numerous chimneys, as though the town were set down on a hundred volcanoes. We pass directly over the one that is largest and brightest and learn that it is Pittsburgh, the world's greatest manufacturer of iron. We are in one of the largest and oldest coalfields in the United States. One hundred years ago local iron ore was smelted by local coal and limestone into iron, but now the production of iron is expanded so much that the local supply of ore is a mere nothing. We see the headlights of numerous locomotives, on dozens of railways, rushing forward with long trains loaded with iron ore, which was brought down from Lake Superior and unloaded at Cleveland, Erie, and Buffalo, on Lake Erie. Lines of coal cars, miles long, great ovens for turning coal into coke, clouds of smoke, dirt, mountains of waste, volcanic smelting furnaces, streams of fiery molten iron shooting out into moulds, sizzling pools of cooling iron, great presses and rollers shaping masses of hot iron and steel into every form as though it were putty, clanging cranes running on tracks and carrying plates of iron weighing tons, fearful noises, and sweating men are everywhere in the towns and cities around Pittsburgh.

There go the ships. From fire, din, and dirt we turn to the north-west, and by morning the beautiful waters of Lake Erie are in sight. As we move westward city after city passes before us; first Erie, then Cleveland, which is as large as Toronto, Toledo, and many others of smaller size. The lake is dotted with great steamers loaded to the water's edge with iron ore. We bring our aeroplane down near Cleveland, the largest of all the cities, and hover above to watch hundreds of ships loading and unloading at the docks. Just below us one, looking like a giant whale, has just tied up. In an instant

By courtesy of Buffalo Chamber of Commerce.

FIG. 90. AERIAL VIEW OF THE CITY OF BUFFALO

By courtesy of Duluth Chamber of Commerce.

FIG. 91. IRON ORE DOCKS AT DULUTH

Great bins are filled from cars that run on tracks. Tubes run down from the bins to the hold of the boats. How many rows of cars are on the docks? How many hatches are on the deck of the boats? How many boats are at the docks being loaded? Find Duluth on the map of the United States.

great openings in the deck, called hatches, are uncovered, and soon immense shovels are gulping the iron ore from the boat. Two iron shells controlled by chains are dropped into the opening through the deck and then brought together like clam-shells under several tons of ore. At once they rise, swing over, and open to let the ore drop into cars standing on tracks by the boat. Thirty of these work ceaselessly, and in two hours the boat is unloaded and is moved off to another dock to receive a load of coal for the ports on Lake Superior. Whole cars are lifted bodily and the coal dumped into the boat, so that in another hour the ship, loaded heavily, is steaming out of the harbour for Chicago or Duluth.

Motor-cars by the million. As we leave Lake Erie we wheel a little to the north and catch a view of Detroit, the most rapidly growing city on the continent. It is the largest producer of motor-cars in the world. The rapid growth of this industry has made its population multiply four times in a few years, until now it is the fourth city in the United States. As we look down we can see the advantages of its position. Great steamers passing up and down the river are as numerous as motor-cars on its main avenue. From the upper and lower lakes they carry freight to and fro from twenty miles of wharves. Long, narrow threads stretch westward toward Chicago and eastward over Southern Ontario toward Buffalo, the Mohawk Valley, and New York. These are the greatest railway arteries on the continent. The farmers' produce of the west surges eastward, and the imports of New York, and the manufactures of the Eastern States, are rushed west along these ever-busy lines. All pass through Detroit. We can see the famous Ford factories arranged in order and covering as much space as a dozen farms.

Where corn is king. But we must hasten on our trip. In an hour what a change from the rush and noise of Detroit! Here we are sailing over the flat, black plains of Indiana, with broad farms on every hand, and all very much alike. A spacious house and a very fat barn surrounded by numerous pig-pens, cattle-stables, poultry-houses, granaries, and very long corn-cribs, tell the story of progress and prosperity. Corn, corn, corn, everywhere! Fields as large as farms, with straight lines of corn ten and twelve feet high, look from the aeroplane like closely-printed pages taken from big books. This is the corn belt, and our aeroplance could fly swiftly for many hours over this vast area, which includes Ohio, Indiana, Illinois, Iowa, and

Missouri. Of course we see wheat, barley, oats, hay and other crops which rotate with corn, but here corn is truly king. As we skim near the ground we see on every farm great flocks of waddling, cylindrical pigs, and sleek, rectangular cattle. As these farmers do not sell their grain but feed their stock with it, the corn belt produces more meat than any other region on earth. We can see everywhere the straight threads which we have learned to recognise as railways. At first they run north-west, then as we move west they run north, now when we are still farther west over Illinois, they are running north-east. Great train-loads of swine and cattle are being rushed toward a pivot.

The world's greatest slaughter-house. We look for the meeting-place of all these railways. As we advance to the north the meshes of the railways become finer and finer; we are getting close to the centre of the web. The farms are giving place to towns and villages and the fields to houses and factories, and these become packed closer and closer until at last we hover over the great city of Chicago, couched like a giant on the shores of Lake Michigan. No matter how high we mount on our aeroplane we cannot see the full reason for Chicago's great and rapid growth. Stretching eight hundred miles to the north-west and west are the greatest wheat-fields on earth, those of Minnesota and the Dakotas, eight hundred miles to the south-west and south are the farms that grow one-half of the world's corn, and beyond these is another great wheat region in Nebraska (nē-bras'kä) and Kansas. Much of the corn and other grain is used to fatten the world's greatest flocks of pigs and herds of cattle. The wheat, corn, pigs, cattle, poultry, eggs, butter, and cheese are brought to Chicago to be distributed throughout the world. Its square mile of stock-yards, which we can see in the centre of the city, has a steady stream of stock trains running into it, and as steady a stream of pork, bacon, beef, lard, and dairy produce turning out of it in great refrigerator cars. This city is the world's greatest distributing centre and its greatest railway centre. Trunk lines connect it with the Pacific, the Atlantic, and the Gulf of Mexico. The waters of Lake Michigan wash its eastern border, which is a continuous line of beautiful parks, and the traffic by steamboat rivals that on the railways. Chicago, with a population of three millions, is now the fourth city in the world, but the western part of the United States, which forms its feeder, is only in its infancy. It is the ambition of every Chicagoean for his city to beat New York, and who knows but perhaps it may.

By courtesy of Chief of Air Service, Washington, D.C.

FIG. 92. FROM FIRE TO ICE

Mount Shasta, California, from the air. This was formerly a volcano. How many cones are there? Describe the top of the nearest one. Find transverse cracks in the glacier in the valley between the two peaks. How steep is the slope?

By courtesy of Chief of Air Service, Washington, D.C.

FIG. 93. THE GRAND CANYON OF THE COLORADO RIVER FROM THE AIR

Describe the slopes. What is the nature of the surface and vegetation of the district? What kind of current has the river? Is there any cultivation in the region? Find a waterfall, an hotel, a bridge, a road and a path through the forest.

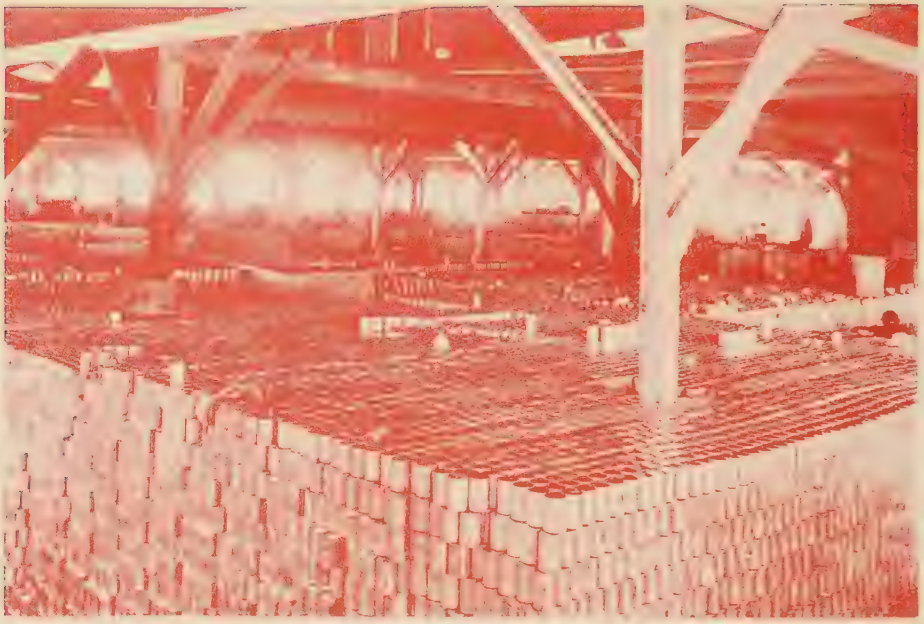


FIG. 94. MOUNTAINS OF SALMON CANS
A cannery at Astoria.

By courtesy of Californian Prune and Apricot Growers.

FIG. 95. A SQUARE MILE OF PRUNES
The prune is a dried plum. What kind of weather is necessary to dry plums in the open air?

A sea of wheat. As we fly west from Chicago we can almost believe we are in Southern Ontario. Cattle are on every farm, and wagons loaded with cans of milk rush to the station to get their load on the train for Chicago. In every village and in many country places are creameries with great rows of cans on the front platforms, for we are now in the dairying region of Wisconsin.

Hour after hour as we glide along, forests and clumps of trees are becoming fewer and more scattered, rolling hills and hollows are giving place to flatter land, and fields of wheat and oats are becoming larger and more numerous. At last we are in the prairies of Minnesota and Dakota. As far as the eyes can see the broad fields of wheat stretch like a great sea, with here and there winding rows of trees revealing the course of a river. This is a part of the prairie wheat belt that is continued into Manitoba and Saskatchewan.

The land of the cowboy. But our journey is not yet half over, and as we speed forward the country becomes barer, the meshes of the iron network larger, and the threads of water thinner and fewer. They are down in deep ravines, which the people call coulées. The houses are farther apart and smaller, and instead of straight roads dividing the surface into a chequer-board, irregular trails, as though made by a frightened cow, form lines on the surface below. We know we are in a dry country. Herds of cattle roam at will over the bare land, and cowboys can be seen keeping an eye on their stock. As we proceed toward the west, low hills appear, and instead of a covering of green, tufts of grass and grey sage-brush with patches of drifting sand mottle the ground (Fig. 104). Such harsh and niggard plants will not support cattle, but the close-cropping sheep have taken their place. We are now in the inhospitable ranch country of Montana and Wyoming, where the houses have shrunk to shacks or huts. Fierce withering heat in summer and cold biting blasts in winter produce the greatest seasonal contrasts on the continent.

Oases in the desert. The hills are now getting higher, the country rougher, and though everything is dry and parched, the rivers have more water than farther east. They are being fed by the melting snow of the mighty mountains which we are soon to see. Here and there in this desert land on the river banks, we see glorious patches of green on the sandy waste. We know that here the sure supply of snow-water is being used to grow bountiful crops of wheat, oats, alfalfa, potatoes, and perhaps sugar-beets.

Over the Rockies. At last away to the west we behold the serried rows of bare, jagged rocks flung across our path. As the sun touches them in the morning light they glow rosy red, some are bathed in clouds, others are covered with snow. These are the mighty Rockies, that stretch from north to south throughout North America. Forests wrap their base, then the trees thin and are replaced by grass-land, and this in turn shrinks before the cold of the upper reaches. Fields and fences, roads and bridges, houses and people, cattle and sheep are all left behind, and only bears wander through the forests, and wild goats and sheep crop the grass undisturbed on the lonely mountain side. As we mount high to get above the peaks we almost freeze, though wrapped with every bit of clothing available. Even breathing becomes quick and gasping in this thin air and our ear-drums press out until our ears ache. At last we have passed the highest range, but rows of peaks are still ahead. Below us now the country looks greener and fresher, the forests creep higher up the peaks and look denser than on the eastern slopes; the trees are larger. Clouds against the peaks are a sure sign that there is more moisture, and suddenly we plunge into a bank of cloud and almost lose our way. Our barometer tells us that we are descending; at last we are in a pelting rain which falls from the cloud through which we have just dropped, and we can see the earth below drenched with rain. Is the forest on fire? Here and there great jets of cloud shoot straight up as though from an explosion, but there is no glowing fire. As we come nearer to the earth the jets are seen to be steam belching from the earth. We know that they are geysers (Fig. 103), and that we are in the fairyland of the Yellowstone National Park.

Towns that die. Hour after hour we fly over wild seas of mountains containing, here and there, a human island—a group of rough houses, piles of rock, and great smoking chimneys, and for hundreds of miles around no other sign of man. These are mining towns set down among the mountains. From some of them millions of dollars' worth of copper, silver, and gold have been shipped by the railways that wind their way among the maze of mountains. In some towns all the houses are empty and falling into decay; there is not a person to be seen, and the streets run rank with weeds. In these dead towns the mines have been exhausted, everybody has gone, and only wild animals haunt the crumbling ruins. Such is the fate of mining towns built in places unfit for farming.

By courtesy of Illinois Central Railway.

FIG. 96. THRESHING RICE IN LOUISIANA

What Canadian grain is threshed in the same way? Compare the size of bags of wheat and sacks of rice. Most of the United States rice is grown in Louisiana.

By courtesy of Spokane Chamber of Commerce.

FIG. 97. WHEAT PASSES FROM FIELD TO BAG

Cutting and threshing wheat is one operation in Washington, the greatest wheat State in the United States. How many horses draw the machine? How wide a swath does the machine cut? Does it cut it close to the ground or just below the heads? How many men are required for the machine?

By courtesy of Spokane Chamber of Commerce.

FIG. 98. A HYDRO-ELECTRIC POWER PLANT IN THE STATE OF WASHINGTON

On the left is a dam which has stored the water to form a lake in the mountains. To the right of the dam are the tubes through which the water runs down to the turbines in the power house. What becomes of the excess water not required for the turbines? Of what is the dam constructed?

Harvesting wheat without binders. At last we are in the state of Washington; the muddy waters of the Columbia (Figs. 99, 100) toss restlessly from side to side of the yawning canyon below, and high on the plateau above, the country looks dry and barren, yet wheatfields (Fig. 97) of immense size cover much of its surface. The rains of April and May stir the wheat seedlings to rapid growth, and the dryness and sunshine of July harden the ripe kernels. So dry is the crop when ripe that it does not require to be cut, bound in sheaves, and put in shocks. As we look down we can see locomotive-like tractors pulling giant machines, which cut off the heads of wheat, draw them into the machines, thresh out the grain, and deposit it in bags along the ground as the tractor advances. Occasionally we see twenty or thirty horses hitched together taking the place of the tractor (Fig. 97). Washington is the first wheat state in the United States, but wheat is not its only product. As we approach the Cascade Mountains we see in the valley of the Columbia River beautiful patches of green gleaming like oases among the harsh sage-brush and brown dusty sand. These are the most valuable apple orchards on the continent, and are continued northward into the Okanagan Valley of British Columbia.

Farms on the Pacific. We pass over the snow-capped Cascades, which are almost as high as the Rockies, and what a change meets the eye as we enter the valley between these mountains and the lower Coast Range which can be seen to the west. On the east of the Cascades the land is arid and brown, and the trees are few and stunted. In this valley the great fir trees rise everywhere like thousands of church spires; the green mantle of grass and the farmers' crops clothe the cleared patches, and beautiful farms much like those in Eastern Canada are seen on both sides of the Williamette River, which runs north to empty into the Columbia River. Standing guard near its mouth is progressive Portland, the commercial centre of the valley and a great port, with entrance to the Pacific Ocean through the Columbia River.

The world's greatest lumber yards. As we fly north through the valley, lumbermen are everywhere felling mighty firs and cedars, and loading logs as big as houses on railway cars or shooting them down slopes into streams. At first we see them moving the logs south toward Portland, but as we advance to the north the tide of logs turns and in increasing numbers the trains and rafts move forward (Fig. 99). At last a winding maze of waters, frayed into long narrow

bays and spotted with islands, appears in sight. Towns are scattered along its shores, but standing out pre-eminent is the fast-growing city of Seattle (sē-at'l). Great saw-mills devour a continuous stream of logs and pour forth as steady a stream of lumber. Ocean steamers in a constant procession come up Puget (pū'jet) Sound to unload the silk and rice of China and Japan, the oranges and lemons of California, the pine-apples and sugar of Hawaii (hä-wī'ē), the gold, salmon, and seals of Alaska, and halibut and coal from British Columbia.

A Garden of Eden in a desert. We turn again to the south and retrace our steps. In a few hours the beautiful forests of the Williamette Valley are left behind. We are over a high, rough, dry country. To the right is seen the volcanic cone of Mount Shasta (shäs'tä) (Fig. 92), which at one time poured out molten rock, but is now resting grandly with its crown capped with snow. We still have the Coast Range, dry and barren, to our right, and the continuation of the Cascade Mountains to our left, but they are now called the Sierra Nevada (sē-er'rä ne-vä'dä), Spanish words which mean snowy mountains. Up their sides the moist winds from the Pacific Ocean blow and deposit their moisture as snow and rain. We are now above the marvellous valley of Central California, which is hemmed in between mountains and screened from all rain. Once it was a silent desert of drifting sand, without enough vegetation to bind the soil. But as we fly over its numerous villages, towns, and cities, its network of railways, and its numerous broad strips of green, we wonder what fairy has stretched over it her magic rod. The snow and rain on the Sierra Nevada are the agents that have made of the desert a garden. Reservoirs are built in which the rain is stored, and flumes lead this down to be greedily drunk by the dry soil, which sunshine and water make the most productive in the United States. Prune plums (Fig. 95) by the square mile, raisin grapes as far as the eye can see, patches of lettuce as large as Canadian farms, peach orchards covering counties, walnuts, olives, apples, plums, limes, oranges, figs, berries, lima beans, spinach, and asparagus cover fields varying in size from an acre to a township.

The golden gate to the Pacific. Up to the present not a gap has broken the crest of the Coast Range except where the Columbia River bursts through in a deep gorge. Now to the right, however, a low gap comes in sight and through it projects a blue arm of the Pacific Ocean. This gap is choked with towns, and at the narrow opening to the sea stands out grandly the city of San Francisco (san fran-sis'kō), for

By courtesy of Portland Chamber of Commerce.

FIG. 99. STRANGE RAFTS OF LOGS IN WESTERN UNITED STATES

How large are the logs? How are they bound together? What is the use of the uprights on the rafts?

By courtesy of Chief of Air Service, Washington, D.C.

FIG. 100. COLUMBIA RIVER FROM THE AIR

Find a railway on each side of the river. Why are railways built in such places? Describe the surface features of the region. Are there any rapids in the river? Are there plains in the river valleys? Is the region cultivated? Is it populated? Find this river on Map 25 of Atlas and trace it from its source to its mouth. What Canadian lakes does it drain?

By courtesy of Los Angeles Chamber of Commerce

Fig. 101. The Making of a Movie at Hollywood

Los Angeles's greatest industry is film-making. Describe the part of each person shown in the picture.

half a century the most notable city in Western America. Its beautiful harbour connects it with the Pacific Ocean, and the narrow gap through the mountains makes it the commercial centre of this fruitful valley.

As we skim farther south in this valley, our minds go back to other days before the water was brought down from the Sierra Nevadas to make it a Garden of Eden. Over seventy years ago, although this valley was difficult to reach, streams of frantic men from every corner of the earth jostled one another to stake claims in order that they might dig into its barren sand and gravel to seek for gold. So desperate was the rush that small tents were rented for forty thousand dollars a year, and ferrymen made over a thousand dollars a day carrying passengers across narrow streams. Most of the gold mines are exhausted, but a few years ago another feverish rush was made to its southern point, for out of bored wells gushed oil in great quantities, and it still continues to be one of the chief oilfields in the United States.

The place to live and the place to die. After we have reached the southern end of the valley and risen over a ridge, we behold another valley even drier than the one we have just left. But again the mountain to the east has made it a Garden of Eden overflowing with fruit and flowers. Not even Detroit and Chicago display such activity as stirs the inhabitants of fair Los Angeles (lōs an′ge-les), the city of flowers, beautiful homes, wide boulevards, and sunny skies. It is the health resort of the Pacific Coast. Wealthy people flock to it from every state, there to spend their declining years, and no city except Detroit has grown so fast. Its most important industry is the making of moving-picture films.

America's wonder. We turn back toward the east and in a sudden plunge pass from beds of flowers and sweet-scented orange trees to the driest, most barren space in North America, called the Great American Desert (Fig. 104). Hour after hour we glide over this weary waste of sage-brush. Giant cactuses, bristling with spines, stand up lonely amid the lesser plants, and for hours not a stream is seen trickling through the thirsty sand. At last we see in the distance a furrow winding across the surface of the flat expanse (Fig. 93). As we come nearer, the eastern face of the furrow is lit up by the setting sun, and its different layers of coloured rocks rival in brilliancy and variety the colours of the rainbow. This yawning canyon is more than a mile deep and from seven to eight miles wide, and at the bottom is a yellow streak of foaming waters. We are looking down on the Grand Canyon of the Colorado

River, one of the greatest scenic wonders of the world. Desert borders it on both sides, and few tributaries tumble down its steep slopes. On and on we fly over desert, plateau, and mountains until at last the Rockies are once more traversed.

The cotton belt. Now we are advancing into the Great Central Plain. First sheep ranches, then cattle ranches are passed, until we reach the plains of Texas, and a flat prairie that gives every indication of a heavier rainfall. The streams are more frequent and larger, the surface looks greener, the cattle are more numerous, and field crops are rapidly replacing the grazing lands of farther west. A new crop meets our eyes as we gaze below. We have already seen cotton fields in irrigated land in Arizona, but now we look down on a sea of cotton bolls. All the land is not planted with cotton, but as far as the eye can see the white patches below are like the foaming crests on a stormy sea, and we do not leave this cotton belt until we reach the Atlantic Ocean twelve hundred miles away. Over four-fifths of the cotton that clothes all nations is grown in this belt.

The eye of the Mississippi. When nearly half across the cotton belt we see the Mississippi, Father of Waters, swinging its giant form from side to side over the flat plain which it has made. Some of the mud that stains its waters has come from Southern Alberta, much of it from the highest peaks of the Rocky Mountains, and the Appalachian Mountains have also given their share. We follow its course south until below us we see it breaking up into a thousand threads, like a piece of rope that has become frayed at the end. It reaches out its many-fingered hand far into the Gulf of Mexico. Railways work their way out among the strands, strange flat-bottomed boats wind in the same direction, and in the Gulf of Mexico can be seen steamers going to and from the same point. What is this magnet that draws to it the carriers of commerce? We hasten over the spot, and there swelters New Orleans (ôr-lēnz′) (Fig. 89) in the midst of the hot, steaming marshes of the delta. Most of the ships and railways are loaded with great bales of cotton.

But we must hasten on. We have no time to describe the rice fields of Louisiana (lö-ē′zi-an′ä) (Fig. 96), the great pine forests of Alabama, Georgia, and the Carolinas, the orange and grape-fruit orchards of Florida set like green islands in a sea of pines, nor the tobacco fields of Virginia and Maryland, but after two weeks we circle around the snowy Capitol and land again in Washington, the capital of the United States.

By courtesy of New Orleans Chamber of Commerce.

FIG. 102 MAKING THE TURPENTINE FLOW

What is the man doing? What kind of instrument does he use? Of what race is he? The tree is a southern pine.

By courtesy of Northern Pacific Railway.

FIG. 103. GEYSERS IN YELLOWSTONE PARK

Find the position of this park on a map of the United States. How many geysers are shown in the picture?

By courtesy of Los Angeles Chamber of Commerce.

FIG. 104. YUCCA TREES AMONG DESERT SHRUBS

Mojave Desert, California. Find the position of this desert in the Atlas. Describe the Yucca tree. Describe the sage-brush.

CHAPTER XIII

THE FIGHTING FAMILY

A DRAMA OF SOUTH AMERICA

BRAZIL, *the biggest and fattest boy in the class, is dressed in a somewhat slovenly manner.*

PARAGUAY, *a small boy, dressed meanly, with torn shirt and patched trousers, has no hat or shoes, looks dirty, and is dark-complexioned like an Indian.*

URUGUAY *is a neat, well-dressed little boy.*

CHILE, *the tallest and thinnest pupil in the school, is dressed carefully.*

PERU *is short and stout, poorly dressed, and forms a great contrast to Chile.*

BOLIVIA *wears a poncho, a long narrow shawl hanging down in front and behind, with a hole near the centre through which the head is slipped. The arms are thus left free.*

COLOMBIA *is dressed in light summer costume decorated with green spangles to represent emeralds mined in the country. He has on a Panama hat.*

PANAMA *is a small girl very much tied in at the waist and well padded above and below —to represent an isthmus.*

VENEZUELA, *of dark complexion, wears a light summer costume.*

ECUADOR, *of a swarthy complexion, has summer clothing and a straw hat, the crown of which comes to a point. The hat may be open at the top to represent a volcano, and painted red near the opening to show the glowing crater. If a tin box can be safely fastened in the point of the hat, and some smouldering substance placed in it so that smoke issues from the top, the effect would be enhanced.*

ARGENTINA *is large and powerful and dressed like a cowboy.*

BRITISH GUIANA, DUTCH GUIANA and FRENCH GUIANA *are three little girls each having the national flag wrapped around her. The Dutch flag has red, white and blue horizontal stripes, while the French flag has the same colours but in vertical stripes. British Guiana is the daintiest, brightest little girl in the school and should be tastefully dressed.*

Each character has the name of the country he represents marked on a banner fastened across the body. As the different characters come on to the stage, they take the same relative positions as their countries have, Chile and Argentina in front, etc.

Peru and Chile enter quarrelling.

Chile. Me a thief! how dare you! I am as respectable as any man in South America. There is no country so varied as mine. My feet are washed by the wind-buffeted waves of Cape Horn; my body, watered with steady rains, is clothed with forests of giant beech and pine; and my head, though covered with desert sands, is most useful of all.

Bolivia comes in, and both he and Peru look very angrily at Chile as he finishes his speech.

Beneath my sands is found the glistening saltpetre, which brings me my chief wealth. Many ships carry it to Europe to fertilise the crops.

Peru. Your boasted head should be my feet, as it once was, and as it shall be again. You meanly stole the saltpetre fields from me and my friend here—(*pointing to Bolivia*)—when we were weak, but we intend to get them back. [*Shaking his fist.*

Bolivia. You boaster, Chile; listen to my story and hang your head. My feet are bathed by summer rains that feed the mighty Amazon. They are decked with the emerald green of the tropical forest, and brightened by birds and butterflies rivalling in their beauty the orchids and vines that clothe the tree trunks. My head is in the clouds on the mighty Andes. Around me shine many snowy peaks, some of which belch forth volcanic fires. You are common compared with me. It is true that the ocean no longer touches my borders, but that is because you basely seized my land and cut me off from the sea. Come on, Peru, let us seize these long legs, and restore that head of his to us, its rightful owners.

[*They fight and continue to quarrel while the others are speaking.*

Brazil enters clumsily, with Uruguay on one side and Paraguay on the other. They, too, are quarrelling and making a great noise. The two little ones, standing on tiptoe, shake their fists under the nose of Brazil.

Paraguay. I know I'm poor and ragged and usually hungry too. But why? Because I'm hemmed in by grasping neighbours. And what are you—[*turning to Brazil*]—but a great big water-soaked, steaming mass of mud, that bullies your neighbours because they are small?

Brazil. You insolent youngsters! How dare you speak so to one of my importance! Don't you know that I am one of the biggest countries on this globe? Over my bosom flows the giant Amazon (Fig. 112)—greatest of rivers. Though my surface is wet, for that reason it is clothed with the most beautiful mantle of giant trees, that wage a constant war against the stifling embrace of mosses, orchids, creepers and vines (Fig. 111).

Uruguay. But what good is your tropical forest? It has almost as few people as the Sahara Desert. My plains, though they have no

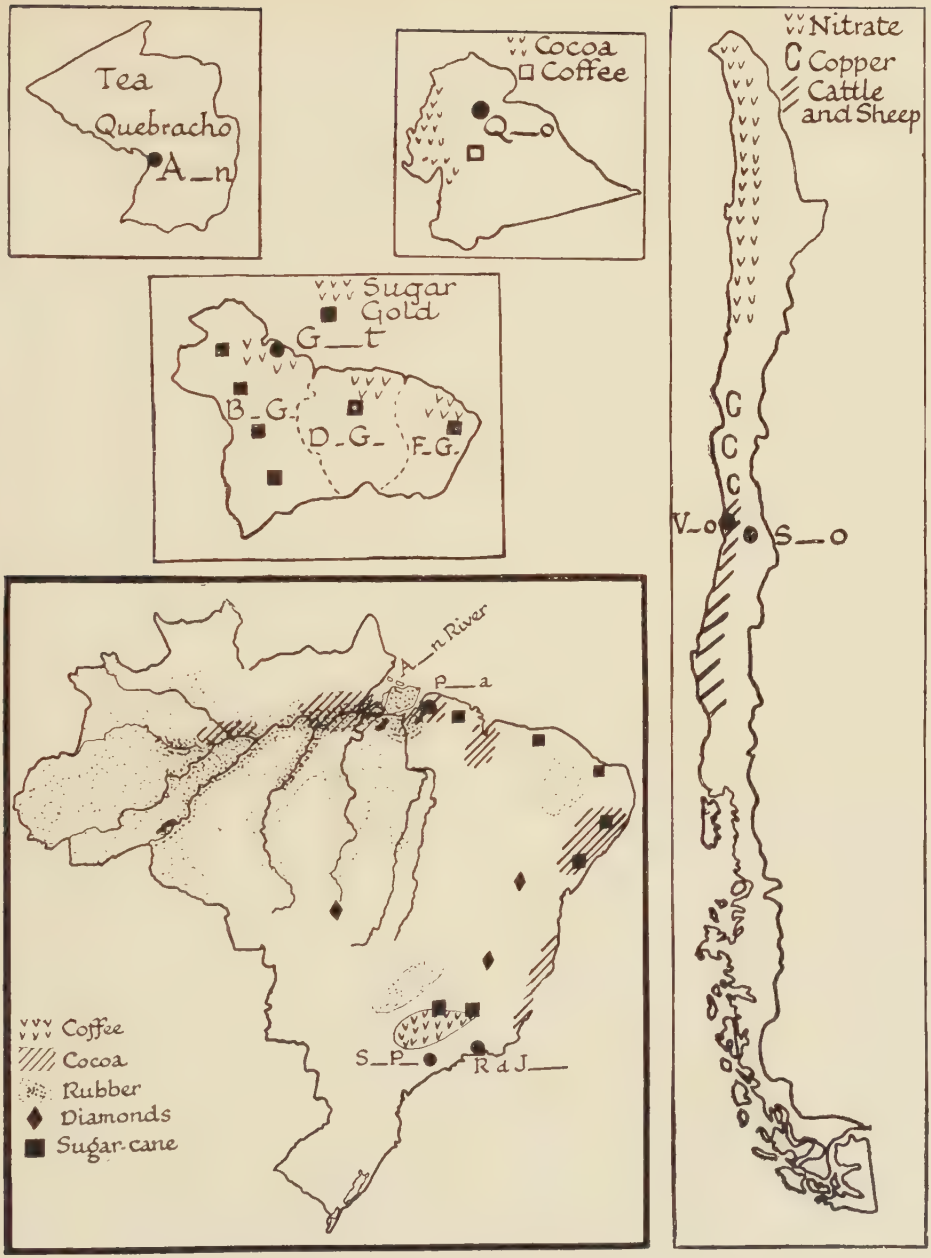


FIG. 105. SCRAMBLED COUNTRIES OF SOUTH AMERICA

With the aid of Map 27 in your Atlas find the name of each of the countries in the pictures. Fill in the names of the places whose initial letters are indicated, and find why each of these places is important. From the drawings write an account of the chief productions of each country.

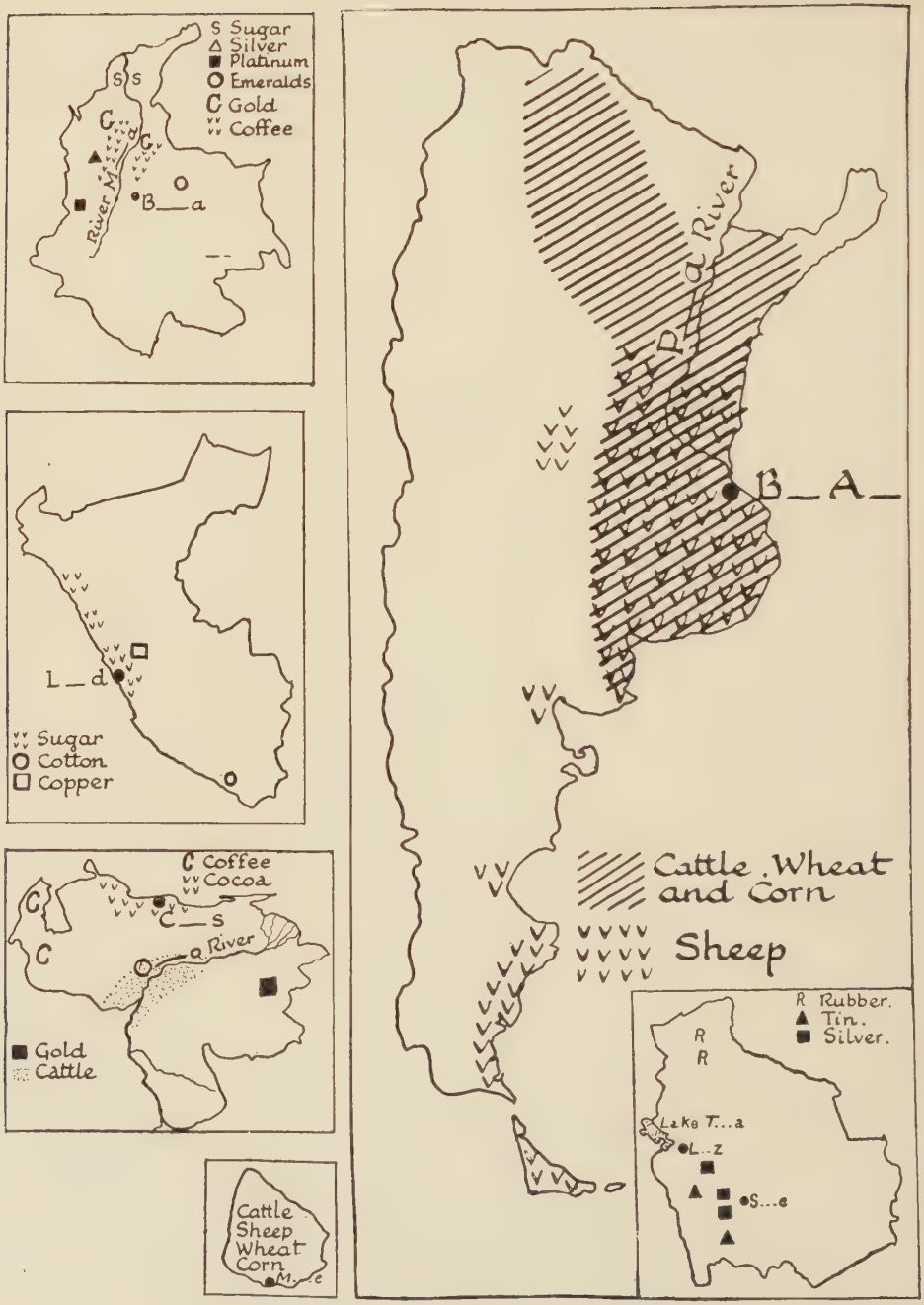


FIG. 106. MORE SCRAMBLED COUNTRIES OF SOUTH AMERICA

trees, swarm with sleek cattle and sheep, which help to feed and clothe the world.

Brazil. Insolent upstart! It would not take much for me to strike you. From my forests are gathered rubber and nuts for every civilised country. The giants of the ocean steam up my majestic river for two thousand miles. On my highlands is grown two-thirds of the world's coffee, and along my fertile, well-watered coasts are smiling fields of cacao, cotton, tobacco and sugar-cane.

Paraguay. Though small and poor, I work hard, and I too grow something good to drink. While your coffee goes to tickle the foreigner's palate, my maté, or Paraguay tea, is drunk by our own people.

Uruguay. You big bully, give us back the lands of which you robbed us many years ago.

[*They continue to quarrel while others are speaking. Colombia rushes in, chasing Panama.*

Colombia. You ungrateful child! When I was in great difficulties, and tried to drive a hard bargain with the United States, you basely deserted me, ingrate that you are.

Panama. I am glad I left you. Now I am far better off. Each year the United States pays me large sums because I gave a belt of land on which to dig the great canal. Her people have taught me how to banish that grim monster, yellow fever, and in other ways to improve the health of my people. I'm glad I ran away from you, you're so behind the times.

Colombia. Keep quiet! You make me furious. I'd whip you if I dared. You'll yet regret leaving me. Just think of my wonderful country. Magnificent mountains branch out from the Andes, and buried in their bowels are the most precious things. My platinum is in every land; my gold and silver surpass those of every other state in South America; my rubies are true blood; and my unrivalled emeralds give colour to the crowns of kings. My broad forests, steeped in the rich perfume of the delicate vanilla orchid, are ablaze with gorgeous flowers and birds of bright plumage. Through my upper valleys gurgle cool brooks fed with snow-water from the peaks above. These, lower down, expand to broad silvery streams, where steamers ply their trade. Most wonderful of all is my great waterway, the Magdalena River (Fig. 107), which threads its tortuous way for many hundred miles through valley and plain and makes accessible the very heart of my country. Will not all these wonders tempt you back?

Panama. I am far more notable than you. Across my waist is the most wonderful canal man ever dug. Great ocean steamers, laden with goods from every part of the world, stop at my ports. If you dare touch me—[*shaking his fist*]—I'll call the great republic of the north to settle with you!

They continue quarrelling. Argentina enters with a superior air.

Argentina. So you fellows are still wrangling. If you are wise, you will get out of this. When I was younger I quarrelled with everybody, as Chile, Bolivia and Uruguay well know. But since I gave up quarrelling I have been more successful than you all. Now I am the greatest and wealthiest country in South America. My great pampas are stocked with the choicest cattle and sheep (Fig. 114). My fields are golden with wheat and corn, and blue with flax (Fig. 113). Railways network my plains, thousands of steamers enter my harbours and pass up my stately rivers—the Plate (plät) and Parana (pä-rä-nä′). All this has resulted from peace and industry. It is true I sometimes fight myself, and revolution flames out, but it is soon quenched, and prosperity returns.

Ecuador enters vigorously hitting himself in the face, chest and arms. The others laugh.

Argentina. That's the way I used to behave. When I wasn't quarrelling with Chile, my different members were fighting each other.

Uruguay. Nobody has had more revolutions than I, but that is all passed; and I, though small, am making great progress.

Ecuador. I am to be pitied. Once I was large, but my bad neighbours have cut me off on every side. In the north Colombia seized my richest lands, but Panama has given him a taste of his own medicine. Peru, not satisfied at eating in on me from the south, has got in behind me also, but he too has felt the bite from Chile. Yet it has not softened him, and he would like to strip me of my best remaining states. But I'll fight him—[*shaking his fist at Peru*]—before I'll give an inch.

Though I've been robbed, I can still boast of gay, dense forests, with great trees towering two hundred feet, their glossy leaves so interlaced that the glaring sun is quite shut out. So matted are the branches that each tree is lashed to those on every hand by endless cables, ranging from tender thread-like creepers to those as

By courtesy of Dr. Wilson Popenoe.

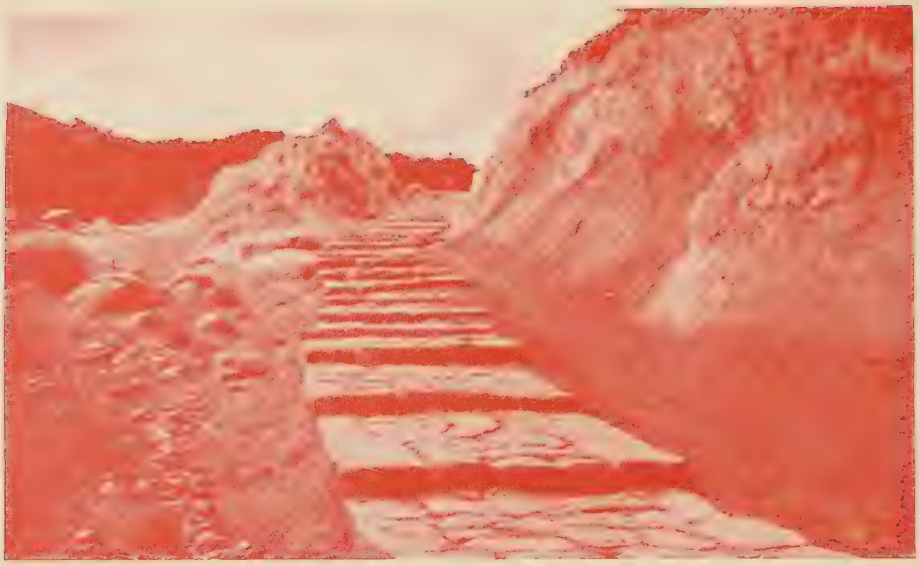
FIG. 107. THE MAGDALENA RIVER

How wide is the river? Describe the boats on it. What is the character of the land's surface?

By courtesy of Dr. Wilson Popenoe.

FIG. 108. ONE OF THE HIGHEST CITIES IN SOUTH AMERICA: QUITO

Are the houses high or low? Are the surrounding mountains bare or covered with trees?



By courtesy of Dr. Wilson Popenoe.

FIG. 109. A TYPICAL ROAD THROUGH THE ANDES

Of what is the road built? Could wagons use it? For what kind of traffic is it built?

By courtesy of Dr. Wilson Popenoe.

FIG. 110. POTTERY MARKET IN BOGOTA

thick as a rope. These present a perfect maze of curious festoons, loops, and slack ropes, in the utmost disorder.

But I also have whole groups of sublime mountain cones, shimmering white or opal on their snowy tops, and yet at times belching forth great clouds of volcanic steam and dust. If I could only get rid of this revolutionary disease—[*hitting himself*]—and settle with this thieving villain to the south—[*shaking his fist at Peru*]—I too would make great progress.

[*While Ecuador is finishing this speech, British, Dutch and French Guiana enter, holding hands; they step on the platform at the back of the stage. All the countries should now be arranged according to their position in South America, Chile and Argentina in front, then Peru, Paraguay and Uruguay, etc.*

British Guiana. It grieves my little heart to see you, my neighbours, exhausting yourselves quarrelling with one another, while the abundance given by God to our glorious continent is wasted, and we are left poor, ignorant, and starving. Our great plains fat with black soil, flooded with sunshine, and bathed with warm rains would laugh with plenty if we would only do our part. Our rivers stretch their navigable arms right up to the shadows of the mighty mountains. The Andes run like a great backbone from end to end, and just as the backbone contains some of the most precious organs of the body, so these great mountains are bursting with precious metals and glittering gems that could make us all rich.

I have a proposal, and if you accept it we shall all be good neighbours and soon gain prosperity.

All the Others. What is it? What is it?

British Guiana. I belong to an empire far larger, and ten times more populous, than our whole continent. Its varied peoples are far more diverse than we, its parts are in every climate and in every continent. Yet we do not quarrel. Why? [*Venezuela saunters in.*] Because our great mother, Britain, has quieted our complaints, and smoothed out our disputes.

Argentina. Not only can I vouch for the truth of what our little British Guiana says, but more than that. All the great railways that carry my wheat, corn, cattle and sheep into my ports were built by British gold and are run under British management. We have always found the British fair and just, and we prefer to deal with them above all other nations.

Chile. I too can say as much. My great nitrate fields are also owned and worked by British companies, and they never drive an unfair bargain or do a shady action.

Venezuela. I was somewhat late in getting in as I had a little revolution on my hands. Since I live next to our dainty lady—[*pointing to British Guiana*]—I have had some dealings with her mother too. I must confess that she treated me a little roughly when I refused to pay my debts, but her treatment set me on my feet, and I have thrived as never before. I had a very keen dispute once, about a boundary, with this little lady, and this quarrel almost set the world on fire with mad war, but we decided it fairly, so I also can recommend Great Britain as a just settler of disputes.

British Guiana. That was exactly what I had in mind. We have had many differences, some over boundaries, others over the uses of rivers and roads. Let us leave them to the dear old mother across the sea, who has healed so many wounds in her own family, and who has done so much to improve all our states.

Chile. I'm willing. Are you, Peru?

Peru. Indeed I am, for I too have had many dealings with her, and prefer to buy from her above all others, as her goods are always reliable.

Ecuador. I'm willing too, and I know she'll give back some of my land stolen by that villain—[*pointing at Peru*]. Can Britain tell me how to burn out this revolutionary ulcer that is sapping away my vitals?

[*Hitting himself.*

Venezuela [*hitting himself*]. That same disease has been a plague to me.

British Guiana. Great Britain has smoothed out more internal strife than any other nation, and usually without the shedding of one drop of blood. Are you all willing that these mad and bloody disputes shall be settled by my great mother overseas?

All. We pledge ourselves to accept her decision.

Argentina. When the day of decision comes, I think that we should all meet round the banquet table to do honour to Great Britain and to pledge ourselves to eternal friendship. I would suggest that you gather in my great capital, Buenos Aires (bwā′nōs ī′res). Not only is it the largest city in the southern half of the world, but its spacious squares and graceful public buildings are unsurpassed.

Uruguay. I am willing, and I invite you all to cross the River Plate and receive the hospitality of my thriving capital, Montevideo. While

By courtesy of Booth Lines (Amazon Cruise).

FIG. 111. A COTTAGE IN THE TROPICAL FOREST

Of what are the walls and roof of the cottage made? Has it a door? How do the leaves of the trees differ from those of Canada?

By courtesy of Booth Lines (Amazon Cruise

FIG. 112. NATIVES ON THE AMAZON RIVER

Describe the native boat. How is the raft constructed? By what signs in the picture do you know that the Indians are uncivilised?

not so large as Buenos Aires, it is a busy port with steamers from every land carrying away its beef, mutton, hides and wool from my broad plains. Besides, my capital is noted as the cleanest city in the world.

Colombia. May I say a word? What is a seaport with its smoke, and din, and dust? Such can be seen in every land. I can offer you sights which the world longs for. Come to Bogota (bō-gō-tä′), my capital (Fig. 110), among the mountains. First you pass up the majestic Magdalena River (Fig. 107), through forests as green and dense as the world knows. Parrots and toucans of vivid colours flash on either shore, monkeys of a dozen kinds chatter and play in trees, while near the shore dull alligators, like half-sunken logs, doze in shallow reaches. Then by strange and narrow railways you will gradually wind up to my cool capital, set like a pearl among the hills.

Ecuador. I can give you a far finer setting. Quito (kē′tō), my capital (Fig. 108), is higher than Bogota, and its beauty is unrivalled. There in a hollow basin among the hills, roofs gleam in the unclouded light, and five smoking volcanoes, like giant watch-towers, stand guard around.

Brazil. While I admit the claims of these small states, yet I can boast a dozen cities, each one of which would make one open one's eyes. Para (pä-rä′) has a very large river and a forest that stretches for a thousand miles. All the treasures of this mighty forest are poured into Para's warehouses for distribution to the world. In Santos and Sao Paulo (Säu pou′lö) you can hear the hum of industry, and here two-thirds of the world's coffee is prepared. But my capital, Rio de Janeiro (rē′ō de zhä-nā′rō), is the queen of cities. Its broad harbour is unrivalled on any coast, its stately mansions, majestic groves, and avenues of feathery palms, backed by green mountains dotted with gleaming roofs, are a sight to feast the eye.

British Guiana. Your claim certainly sounds a good one, but let us leave that and all our disputes to be settled by my mother.

All. We are agreed.

British Guiana. When next we meet, let our feast be truly South American. What can each supply? I will start with sugar and rice, two of my most valued exports.

Brazil. Since I grow coffee for two-thirds of mankind, this feast would not be complete without my beverage.

Colombia. Certainly you grow much coffee, but if quality, not quantity, counts, then Ecuador or I will satisfy you best.

Paraguay. Let us be South American. Though Brazil grows the coffee, she does not drink it. Our national, or shall I say continental, drink, is maté, or Paraguay tea, which is my greatest wealth. We must, if patriotic, use this drink.

Argentina. I'll supply wheaten flour for bread and cakes, as well as mutton and beef, for all of which useful products I stand unrivalled on our continent.

Chile. The wine from my vineyards is clear and sparkling; I can also bring oranges and lemons.

Peru. While I could send sugar and coffee, I had better bring delicacies instead. What feast is complete without olives? I'll see they are supplied.

Ecuador. Though I am small I stand above all in the growth of cacao beans. As these are ground to cocoa and chocolate, I can supply one more beverage as well as the choicest of candy for dessert.

Panama. That reminds me that more fruits will be required. Mark me down for bananas, of which I grow great quantities.

Venezuela. In thinking of the feast, you have forgotten that eating will soon end, and then we all must smoke. Though Brazil and others may grow more than I, yet I'll bring my best tobacco for the feast.

Brazil. Just to complete dessert, suppose we have some Brazil nuts from my vast forests.

Argentina. And I'll bring raisins from my Cordova vineyards (Fig. 115).

British Guiana. Already your faces change and kinder looks are cast at one another. Since we have confidence that our disputes will all be fairly judged, let us cease this ugly quarrelling at once. You, Peru and Bolivia, kindly join hands with your neighbour Chile. [*They shake hands.*] Colombia, as the bigger, turn a pleasant face to your offspring, little Panama, and let your arms be locked in friendship. [*Colombia and Panama stand arm in arm.*] Now, Ecuador, no longer look with hateful eye to north and south, but grasp Peru with your right hand and Colombia with your left. [*The three join hands.*] Last of all, great Brazil, look southward at your little neighbours, in one big palm place the tiny hand of Paraguay, and in the other the hand of your active little neighbour Uruguay. [*Brazil, Uruguay and Paraguay join hands.*] How different is this scene from what it was! May the future prosperity of South America indeed be great!

CURTAIN

By courtesy of Ferro Carril Oeste.

FIG. 113. A MOUNTAIN OF WHEAT

This is a common method of storing grain in Argentina. Compare this with the method of storing in the Prairie Provinces. Are there autumn rains in Argentina? How are the bags got to the top?

By courtesy of Ferro Carril Oeste.

FIG. 114. SHEEP, SHEEP, AND MORE SHEEP

This represents a sheep-market in a town in Argentina. How many sheep-pens can you count? Count the number of sheep in one pen and reckon about how many there are in the whole yard.

By courtesy of Ferro Carril Oeste.

FIG. 115. SQUARE MILES OF GRAPE-VINES IN ARGENTINA

In the plains of Mendoza in Western Argentina are great vineyards. How are the vines grown? How far apart are the rows? How are the vines fastened up? How are they watered?

PUZZLE QUESTIONS ON THE DRAMA

By studying the drama, find answers to the following questions :

1. What is the largest country in South America ?
2. Where are the finest emeralds found ?
3. What is the chief source of the world's platinum ?
4. In what country are grapes extensively grown ?
5. What is the largest city in the Southern Hemisphere ?
6. Where is cocoa produced in largest quantities ?
7. Along what river are alligators found ?
8. Describe the garment called the poncho. In what country is it worn ?
9. What country has its capital near great volcanoes ?
10. Which is the cleanest city in South America ?
11. Which city has the finest harbour ?
12. Which state produces the most gold and silver ?
13. In which country do beech and pine forests grow ?
14. Which country does not touch the sea ?
15. In which country were the railways built by Great Britain ?
16. Which state mines saltpetre in great quantities ?

SCRAMBLED WORDS

Arrange the letters in each of the following groups to make names as indicated (Map 27 in Atlas).

(*a*) Six capitals of countries :

raCacsa, toQui, divoMteone,
ioR ed ironaJe, Grogteowne.

(*b*) Four important rivers :

rogeN, caTotinns, zamAno, gaMladanc.

(*c*) Three precious stones, each followed by the country in which it is produced :

damerel, loCbomai; miadnod, zarBil; bury, bamloCoi.

CHAPTER XIV

A SHORT CATECHISM ON EUROPE

The greatness of Europe.

Question. What is the meaning of the word Europe?

Answer. It means darkness or the land of the setting sun, and Asia means the land of the rising sun. These names were evidently given by people living somewhere between the two, probably in Asia Minor or in Greece.

Q. Is Europe the greatest of the continents?

A. It is certainly the smallest at any rate. It is to Asia as Jack and the Bean-stalk is to the Giant, and to Africa as a Shetland pony is to a big dray horse. Indeed, it is not much larger than Canada. But crowded within that small continent are more people than are found in all the others together except Asia. Besides, its people surpass all others in intelligence, wealth, and civilisation. The greatest scholars, the most celebrated artists, the most brilliant writers, the keenest thinkers, in fact the world's leaders during the last two thousand years, have mostly been nourished in this little, irregular continent.

A peninsula of peninsulas.

Q. Why has Europe become so great?

A. Open your Atlas at the map of Europe (Map 32). Notice that it is a peninsula of peninsulas. Great inlets of the sea stretch their kindly arms far into the land to give sweet rain and balmy air. The heart of the continent is brought almost within sound of the sea, and every inland point benefits from the great ocean ships ready to carry goods to all parts of the world.

The backbone of the continent.

Q. But is not Europe farther from the Equator than any other continent?

A. That is true. England, Germany, and the greater part of Russia are as far north as bleak Labrador. Even Spain and sunny Italy lie on the same parallel of latitude as New York. But fortunately for

Fig. 116. How to find the Area of a Continent

First count the number of squares wholly within the region. Then count the number of squares partly within the region. Divide the second number by two and add to it the first number, which gives the number of squares covered by the country. As each square measures ten thousand square miles, the area can be calculated. For example take Bolivia:

Number of squares wholly within Bolivia (those with crosses), 35. Number of squares partly within Bolivia (those with circles), 35. ∴ Area in squares, $35+\frac{35}{2}$ $52\frac{1}{2}$. Area in square miles is $10{,}000\times52\frac{1}{2}=525{,}000$ square miles.

In this way find the area of Brazil, Peru, Colombia, Argentina, and South America.

FIG. 117. EUROPE BROKEN TO FRAGMENTS. CAN YOU MEND IT?

On the map are all the countries of Europe as well as some of the larger islands that are parts of countries, but they have not their proper relative positions. Coast lines are represented by continuous lines and international boundaries by broken lines. The initial and last letters of each country and its important cities are placed on the maps. The small circles stand for cities, the black ones being the capitals. With the aid of Map 32 in Atlas fill in all the names, then make an exact tracing of each country on stiff cardboard, cut out the tracings and paste them on a sheet of cardboard in their proper positions. When properly placed they will make the map of Europe. What are the five largest countries

Europe, its great mountainous backbone extends from east to west along the continent. Here are the mountains of Spain, the Pyrenees (pir′ē-nēz), the Alps of France, Italy, and Switzerland (swit′zer-land) which extend through Austria, the Carpathian (kär-pā′thi-an) Mountains continuing the line to Russia, and farther south the Balkan Mountains pushing through to the Black Sea. Beyond this the giant Caucasus (kâ′ka-sus) carries the highlands to the coast of the Caspian Sea. Sloping off to the north from these complex folds is the great plain of Europe, the home of its chief population and wealth.

The breath of life and warmth.

Q. How do these mountains benefit the continent?

A. To the west of Europe lies the North Atlantic Ocean, over whose restless surface strong south-west winds prevail. In summer they carry the moist cool air over the great plain of Europe, which otherwise would be intensely hot. The sea-breezes not only cool the air and make it pleasant, but bring abundant rains to every slope. Their kindly breath is felt as far as the interior of Russia.

Q. What happens in winter?

A. At this season these winds are pure gold. When Labrador and Central Canada are gripped by ice and snow, the warm south-westerlies bathe Great Britain, France, and Norway, in the same latitude, with their balmy air. They soften the winters of Holland, Denmark, and Germany, and as no mountain lies across their path, they carry warmth far into the interior until they die exhausted on the bleak steppes of Russia.

Q. Why is it so important to have the mountains running east and west?

A. In North and South America the mountains are thrown like a great barrier wall along the western coast. The winds from the Pacific Ocean, as they come against the mountains, are killed before they penetrate the country. As a result, the interior of Canada and the United States is dry and hot in summer, and dry and intensely cold in winter. But in Europe, as we have seen, these winds meet no serious barrier and carry their life-giving qualities across the continent even to the foot of the Ural Mountains.

Winter harbours beyond the Arctic Circle.

Q. What effect have these winds on the harbours of Europe?

A. Though every harbour in Labrador and Greenland is locked with ice throughout the winter, those of Scotland and Norway right up to the Arctic Ocean are used by ships all the year round. The

prevailing south-west winds not only blow the gentle air from the ocean to the land, but cause a current in the ocean which flows in the same direction as the wind. This current (Map 7 in the Atlas), which is called the West Wind Drift, as it crosses the Atlantic Ocean sends a branch past Scotland and Norway, which transports the warmer water of the Atlantic northward to lap the coasts of Scotland and Norway with its ice-dispelling touch. In the inner Baltic Sea, and especially in the Gulf of Bothnia (both'ni-ä), which are shut off by the contracted Skager Rack (skag'er-rak') from this warm current, and by the Scandinavian (skan-di-nā'vi-an) highlands from the mild Atlantic breezes, the harbours are blocked with ice throughout the winter.

Rain brings riches.

Q. Do these westerly winds blow throughout the year?

A. Fortunately for Europe they blow only to the north of the great mountainous backbone. To the south of this they are felt only during the winter.

Q. Why do you say fortunately?

A. This difference between the north and the south has aided to make Europe the greatest continent. The plants in the part of Europe bordering the Mediterranean Sea are very different from those of the northern plain. In the latter the rain falling throughout the year clothes all this region with dense forests of giant trees; in the south oaks, elms, maples, and beeches, and in the north birches, pines, spruces, and firs. As in the Mediterranean regions rain falls largely in the winter, the drought and burning heat of summer wither the plants, bake the soil, and scatter it as dust. As forest trees cannot grow under such heat and drought, the dense gloomy forests of the north are replaced by a sparse covering of spiny shrubs, whip-like plants, and leathery-leaved evergreen trees. Wherever, in this region, water stored from the winter rain is used to moisten the hot and thirsty soil, the desert gives place to lush meadows of grass, sweet-scented orchards of oranges and lemons, and graceful festoons of green, pink, and purple grapes. Even without water, the heat-loving olive is able to bear a rich crop of its plum-like fruit. So hot and arid are some parts of Spain that great date palms, emblems of the desert, unroll their feathery leaves before the unclouded sky.

Although Europe extends across only thirty-five degrees of latitude she has a greater variety of plant life than Africa or South America, which extend through almost twice as many degrees. All zones of

By courtesy of "World's Markets"

FIG. 118. THE SHORTEST PEOPLE OF EUROPE: THE LAPLANDERS

Describe their house. Has it any windows? Of what is it made? Describe the appearance of the people.

By courtesy of "World's Markets."

FIG. 119. ENJOYING THE WINTER IN OSLO

Describe the reindeer. Why has it such broad feet? How does the sleigh differ from the one used in Canada? In what sport are they going to engage?

By courtesy of Imperial Paper Company, London.

FIG. 120. TIMBER TRANSFORMED TO "THE TIMES"

Wood pulp from Quebec; in London. How high do the bales extend? How are the bales lifted? How many bales are lifted at once? This pulp is used for England's greatest newspaper, *The Times*.

vegetation, from the pallid moss and lichen of the frozen north tundra to the date groves of Eastern Spain, are found within her borders. Such variety has always caused active trade between the north and south.

Desert empires.

Q. Is it not unfortunate that all Southern Europe has rain during the winter, the period of least growth, and dearth of rain during the summer, the best growing period?

A. The answer is yes and no. Have you noticed that the first great civilisations of Europe arose in this region and not on the northern plain? First, little Greece taught the world beauty, and chiselled monuments of marble whose perfection still makes the world wonder; next the great Roman Empire introduced law and justice to the world; then Spain and France in turn led the world. Only within recent times has greatness crossed the Alpine chain and made Great Britain and Germany powerful.

Q. You do not mean to say that plants and rain had anything to do with this?

A. Strange as it may seem, all the earliest civilisations arose in deserts where fields were watered from storage tanks or rivers. The planning needed for such irrigation led men to work together; this grew to government, and empires were formed. In these early days no great civilisations arose in regions clothed with forests.

The fight with the forests.

Q. Why did great forests prevent great nations from rising?

A. Forest dwellers make their living by hunting and fishing. They eat flesh, dress in furs, and build their huts from skins and logs. Each family group is self-supporting, occupies its own part of the forest, and lives in independence. Farming grows slowly in such regions. To clear the land of forests is a gigantic task even now. How much harder was it when tools were few and crude! The early barbarians found it hard with their rough axes to cut down great trees. It was harder still to clear the land of gnarled stumps and roots as tough as wire cables. In Southern Europe where trees were few and vegetation sparse, land was easily cleared, and there the civilisation of Europe began. But when at last the plains north of the mountains were cleared of forests, and farms moistened with summer rains were cultivated, the south with its dry summers and winter rains could hold its own no longer with its more favoured rival. The climate also played its part directly. The yearly seasonal change, from summer's heat to winter's

tingle, puts a vigour in the blood that has caused the people of the north to far surpass those along the Mediterranean Sea. To-day the peoples of Northern Europe, the British, French, Dutch, Scandinavians, Germans, and their colonists in other lands, are the most progressive in the world.

Man breaks barriers.

Q. Are there any other reasons for the progress of this continent?

A. Yes, indeed, things that at first hold men down, may later, as advance is made, push them up. The Northern Plain was once shut off from the more highly civilised people of Southern Europe, Egypt, and Western Asia, by that great wall of mountains that starts with the stern Pyrenees, is continued by the snowy Alps and complex Balkans, and completed by the Caucasus. The stormy Atlantic Ocean was a still more effective barrier in those early days, when boats were small and sailors timid. Goods could be brought from south to north only through the mountain gaps. Map 33 in the Atlas shows where these lay. One opened along the Rhone Valley in France with Marseilles (mär-sālz′) at one end and Paris at the other. Two have broken through the Alps with Venice and Genoa at the southern ends and Innsbruck (ins′brök) and Basle (bä′z'l) at the northern ends, and one in the east lies along the Danube River. For thousands of years goods were carried, and armies marched, through these rough paths. But now the sea is man's best friend. As the coast of the Northern Plain is an irregular line of islands, peninsulas, gulfs and bays, and wide-mouthed rivers scoured deep and clear by tides, it is blessed beyond all other parts of the world for sea traffic. It is therefore not strange that London, Liverpool, Antwerp (ant′werp), and Hamburg (ham′berg) are the greatest seaports in Europe.

Q. Is the sea of any further advantage?

A. The sea along the whole west and north-west of Europe is shallow, and swarms with such fish as herring, cod, haddock, mackerel, plaice, and sole. As the coast is an embroidered border of harbours and inlets, every coastal village has its fishermen, and an abundance of fresh and wholesome food is harvested from the sea.

Even the forests, which at first kept the people barbarous, have now become a means of progress. The lumber is used to make furniture and buildings, the wood keeps them warm in winter and feeds

By courtesy of Swiss National Railways

FIG. 121. STICKING HIS HEAD AMONG THE CLOUDS

The mount shown is the Matterhorn, one of the most notable of the peaks in Switzerland. What is the white in the foreground? Why are there no trees?

By courtesy of French Government.

FIG. 122. HOW A BEAUTIFUL CARPET IS MADE

How many women are working at the carpet? What are the large rollers for?

many mills and steamboats, and the pulp, ground from small trees, supplies paper for newspapers and books.

The minerals of Europe.

Q. Has the distribution of minerals favoured the north?

A. You might suppose that minerals are most plentiful in the great ranges of mountains running like a backbone across the continent from west to east. In Chapter V. it was shown that minerals are found most frequently in old worn-down mountains. But the great height of the Alps betrays their youth. On the north of the main axis of these mountains is a much older range, eroded to its very roots, so that only here and there does it project high enough to be called a mountain. The Cevennes (sā-ven′), Vosges (vōzh), and Ardennes (ar-den′) Mountains in France, the Black Forest, Hartz, and Gebirge (ge-ber′ge) Mountains in Germany, and the Carpathian Mountains of Poland, Czecho-Slovakia, and Rumania are protruding fragments of this ancient range. These and similar ranges in Great Britain contain most of the great mines of Europe. Coal seams underlie many parts of the plain, iron beds lie conveniently near the coal, and zinc, tin, lead, and many other minerals are mined in different parts of these old mountain roots.

Coal is king.

Q. Which of these minerals has helped Europe most?

A. Coal is the king, for Europe is the workshop of the world. The richest and most delicate cloths, whether silks, linens, cottons, or worsteds, are woven in her mills. Metal goods, from watch-springs to dreadnoughts, the most delicate china and the coarsest dinner plates, dazzling cut-glass and rough window-panes, the daintiest writing-paper and the coarsest cardboard, with every other product that the mind can think of, are all turned out in vast quantities by great humming hives of factories that surround the coal mines of the northern plains of Europe. Here are densely crowded the world's most skilful workmen, and nowhere else are found such numbers of large cities.

Up to the present, coal has been the fuel that has moved machinery, but during recent years factories have begun to spread beyond the region of coal mines. Norway in the north, Switzerland in the interior, and Italy in the south, are now beginning to harness the foaming torrents of the mountains and to convert water into "white coal." They are generating electricity from falling water and using it to turn their machines more effectively than does coal.

Europe's watery spider-web.

Q. The St. Lawrence River and Great Lakes have helped greatly to develop Canada; have rivers and lakes played a similar part in Europe?

A. Add Europe's rivers to her tattered coast and we have the finest waterways on earth. The mountain axis lies closer to the southern than the northern side of the continent; mountain spurs project from the south and cover most of the peninsulas, so that almost everywhere along the Mediterranean coast the sea beats against a rock-bound coast. Rivers emptying into the Mediterranean Sea are short, swift, and of little value for transport. But north of the mountain axis the plain slopes off gently, and rivers flowing across its well-watered surface are valuable for navigation. In the east, where the plain is widest, the rivers are longest. On the Volga (vol'gä), the largest river in Europe, thousands of steamships ply their trade along its course. The Seine (sān), Rhine, Elbe, and Vistula (vis'tū-lä) allow ships to come up almost within the shadow of the mountains in the south. Canals connect these rivers and with other streams make a complex network of inland waterways not seen elsewhere.

The conqueror of the world.

Q. Has the character of the people anything to do with the greatness of Europe?

A. This is one of the very greatest factors. The best evidence of the greatness of the Europeans is that into whatever continent they have gone, at once it has begun to increase in wealth, intelligence, and skill. America north of Mexico, which was at its discovery thinly populated with fighting savages, has been changed by the British into densely populated communities of prosperous and enlightened people. The rest of America is ruled and largely populated by Spaniards and Portuguese. Africa was the dark continent until the nations of Europe sent their officials to guide the people, and already European light is dispelling the darkness, and Africa is taking its place among the other continents. Almost the whole south of Asia has been brought to peace and relative prosperity by Britain and France. The savagery of the islands of the Pacific Ocean is gradually disappearing before the genial light shed by the European nations, Great Britain, France, and Holland. Australia and New Zealand, like Canada and the United States, reflect the kindly influence of British rule. It is no wonder that the people who have brought light to the dark places of the world, have made the smallest continent the greatest of all.

By courtesy of Consul of Czecho-Slovakia at Montreal.

FIG. 123. A GREAT CITY OF EUROPE: PRAGUE

Find this city on the map of Europe. Of what country is it the capital? What is the name of the river? What evidence is there that the bridge needs protection from drifting ice?

By courtesy of "World's Markets," New York.

FIG. 124. A CHURCH IN NORWAY EIGHT HUNDRED YEARS OLD

Of what is the church built? How does it differ from a modern church? How does one get over the stone wall?

By courtesy of Ethnographical Museum, Sophia, Bulgaria

FIG. 125. SPINNING AND WEAVING IN THE HOME

Try to find out what each of the three women is doing. These are Bulgarian women.

By courtesy of Ethnographical Museum, Sophia, Bulgaria.

FIG. 126. THE YEAR'S VINTAGE IN BULGARIA

What contains the wine? What is used to draw the wagon? Describe the costume of the people.

The factories of Europe.

Q. You have mentioned lumbering, fishing, mining, and farming. Are the Europeans also leaders in manufacturing?

A. This industry requires the greatest skill of all. The machines are complex, and the articles made often of the most delicate kind, requiring a skilful hand and a trained eye. Great buildings, costing millions of dollars and employing thousands of workmen, require men of tried judgment and experience to manage them successfully. Only countries which have wealth, men of business ability, and skilled workmen, can be great manufacturers. Iron, from which the machines can be made, and coal to make them work, aid the industry. The Northern Plain of Europe abounds in all of these. In England, Southern Scotland, France, Belgium, Germany, Poland, and Czecho-Slovakia are the chief coal mines of Europe, and the great iron mines are in the same regions. There also are the most enlightened people of the continent, and in the midst of the coal and iron has sprung up the greatest number of factories on the face of the earth.

GEOGRAPHICAL PEPPER AND SALT

Canada's most valuable mineral is coal, of which she produces fifty million dollars' worth annually; gold stands second with a production of thirty-six million dollars' worth.

Over half a million Canadians are engaged in her factories.

Are you aware that the area drained by the Nelson-Saskatchewan River system is greater than that drained by the St. Lawrence with all its tributaries?

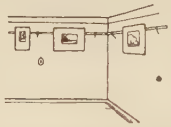
There are seven rivers more than one thousand miles long wholly or partially in Canada: Mackenzie (2525 miles), St. Lawrence (1900), Yukon (1765), Saskatchewan (1205), Columbia (1150), Peace (1065), and Churchill (1000).

About one-fourth of the land of Canada is fit for farming, but only about one-sixth of this amount is at present tilled.

Quebec is the only province in Canada that contains more females than males.

CO HAGEN on the island of Zealand is the

ital of MARK and is a great export-
-er of grain, butter, and bacon. WAR in

LAND is on the Vistula River; it is a great-
railway centre. ENCE is one of the most
celebrated cities in the world and contains
the most beautiful  . It is in Italy——

GRADE is the capital of the new country
Yugo-slavia and is on the Danube River. —··· -
LEN GRAD is the new name for Petrograd
formerly the capital of IA; it manufactures
cotton, leather, and glass. is one of
the greatest seaports in Europe and has immense
trade with America. It is on the River Mersey in

Planned by Dene.

FIG. 127. ALL ABOARD! IN EVERY PART OF THE WORLD

The different methods of carrying people and goods are shown in the picture. Attached to each method is a number from 1 to 16. You must search till you find these numbers and then look at Fig. 128 to find the parts of the world in which each method of carrying is used. Write in a vertical column the numbers from 1 to 16; after each number put in order: (1) the method of carrying; (2) a description of the method; (3) in which parts of the world it is used; (4) why it is used in those parts of the world; (5) the advantages and disadvantages of such a method.

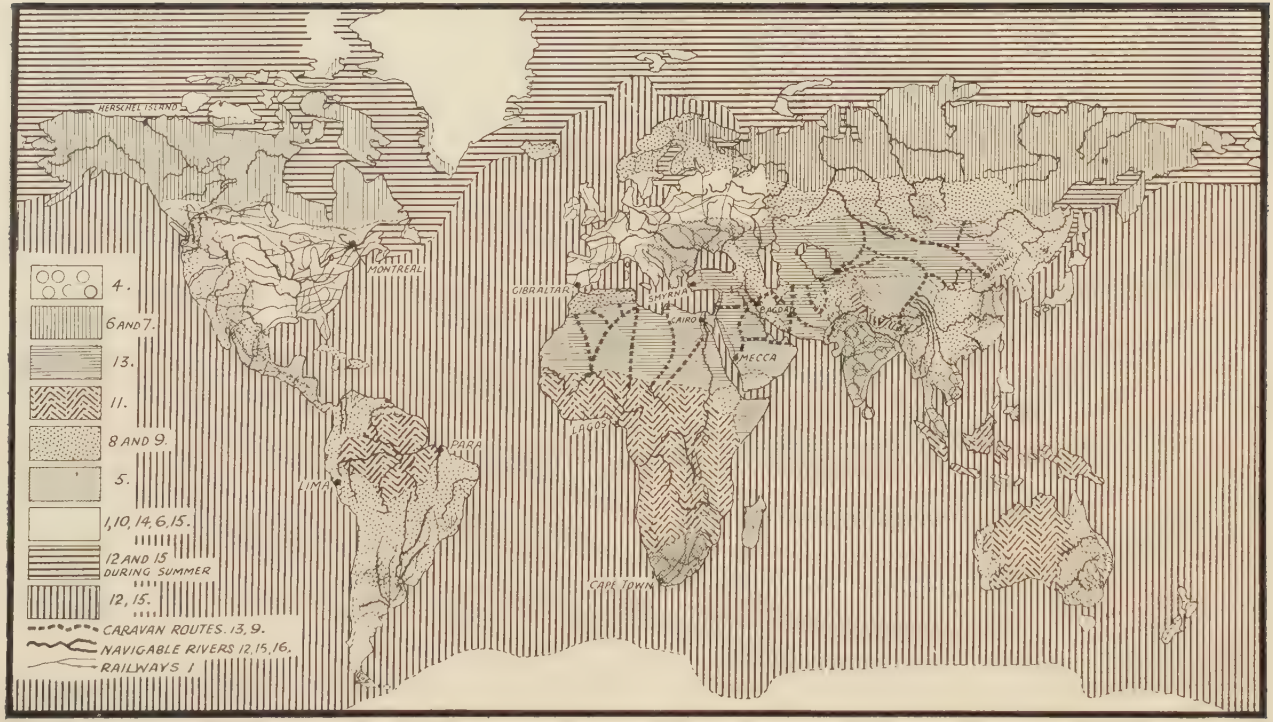


FIG. 128. HOW THE WORLD TRAVELS

The various methods of transportation are shown by different markings on the map. The key to the markings has numbers whose significance is shown in the preceding picture (Fig. 127).

From a study of the picture and the map write an essay on the methods of transport. State the methods by which you would travel most directly from: (1) Lagos to Gibraltar; (2) Herschel Island to Montreal; (3) Mecca to Bagdad; (4) Peking to Smyrna; (5) Cape Town to Cairo; (6) Para to Lima. These places are all marked on the map.

England. WERP, the largest city in GIUM, though not the capital, is one of the most important seaports on the continent of Europe. Near the of the Rhone River is MAR the greatest port on the Mediterranean Sea. Goods from the East are unloaded on its wharves and shipped by railway to many parts. In Czecho-Slovakia the chief city and capital is GUE, which is a centre of both manufacturing and trading. In the north of Ire-land is the progressive city of the centre of linen manufacturing and shipbuilding in that country. NEW in England also builds ships and exports coal. O O near the mouth of the Douro River in Portugal exports large quantities of .

The largest and busiest city in Italy is

AN, which rivals in France as a centre of the silk industry. LIN the third largest city in Europe, is the capital of the GER Republic, it is only surpassed in size by London and Paris. Another great city in Germany is LEIP which is noted for making and selling of books and for the teaching of music. Farther north in Sweden is found the capital city of—

. It is also the centre of trade and manufactures. The greatest seaport in Ger-

-many and one of the most important in the world is

near the mouth of the Elbe River. In Spain the greatest port is ONA. and in

Turkey it is CON OPLE, while in Scotland it is GOW on the Clyde River and in Italy it is LES which is also the larg-est and most beautiful city in the country.

GEOGRAPHICAL PEPPER AND SALT

The city of Quebec has the greatest percentage of its people born in Canada (97%), and Victoria, B.C., has the least (46%).

Manufacturing leads in the value of its production among all the industries of Canada, and farming stands second.

The death rate in Saskatchewan is lower than in any other province, indeed, it is lower than in any country in the world.

Hay is the most valuable field crop in all the Canadian provinces except Manitoba, Saskatchewan, and Alberta, where of course wheat leads.

Saskatchewan raises most horses and turkeys, British Columbia most goats and rabbits, and Ontario most cattle, sheep, swine, hens, ducks, and geese.

Quebec produces more than one-half of all Canadian maple-sugar and syrup.

Ontario now leads Quebec in the growth of tobacco.

So far as the value of output is concerned, Canada's most valuable wood is spruce.

British Columbia leads in both the fishing and lumbering industries.

The water-powers of Quebec surpass those of any other province.

The leading manufacturing process in Canada is the making of pulp and paper.

In both number of skins and total value, the muskrat surpasses all other fur-bearing animals in Canada.

CHAPTER XV

ASIA, THE CONTINENT OF GIANTS

The greatness of Asia. We are now going to study Asia, the most wonderful of all the continents. This giant is twice as large as Africa, larger than the whole Western Hemisphere with Australia thrown in, and though our country has a vast area, almost six Canadas could be carved from this mighty continent. Its swarming population is so great that, if all the people in the world were arranged in a line, three out of every five would be Asiatics.

It is also a continent of giant mountains, giant plateaus, giant plains, giant rivers, and giant deserts.

Its people in the past have also been giants in the strength and perfection of their bodies and in the superiority of their minds.

While the rest of the world, with the exception of Egypt, was dressing in skins or going naked, drinking one another's blood, and living little better than beasts, highly-civilised empires, whose buildings, ornaments, and monuments, as they are dug from the desert sands, are still the wonders of the world, occupied the lands of Western and Central Asia. Religion more than anything else has made people what they are, and all the great religions of the world took their rise in Asia, and Asiatics were their founders.

Asia gave to Europe not only religion and civilisation, but also its people. At different times the populations of Central Asia have boiled over, and its surplus people have flowed eastward into China, southward into India, and westward into Europe and Africa. The English, Germans, Russians, Hungarians, and peoples around the Mediterranean are the children of races who came originally from Central Asia. This fruitful continent also gave to the world rice, wheat, barley, oats, millet, many vegetables, such as onions, peas, beans, radishes, and spinach, and nearly all the cultivated fruits, such as

FIG. 129. REGIONS OF ASIA WHERE RIVERS DRY UP

What four areas in Asia do not drain to the sea? Is the rainfall in them heavy? (Map 49 in Atlas.) What large expanses of water are in these regions? What important rivers are in these regions? What regions are over 12,000 feet high?

FIG. 130. THE FIVE THROATS OF THE WORLD

Three of the important straits in the picture can be found on Map 33, and the other two on Map 46. Find the name of each. From Map 2 estimate which has the greatest shipping and which the least. Fill in the names of all the places whose initial or first and last letters are marked. After the name of each city write some of its products. State the products going in each direction through each strait. Find a British fortress that guards each of four of these straits. What country is on each side of the straits? What bodies of water does each strait connect? Which is most useful to Russia? Which to China? Which to India? Which to Norway? Which has the largest city on its border?

apples, pears, plums, cherries, almonds, mulberries, and raspberries. What would the world do without horses, sheep, goats, asses and camels? All of these were first tamed and used by man in Asia, and thence were introduced into other parts of the world.

The giant highlands. Suppose the water surrounding the continents rose six thousand feet, then nothing but a few narrow ridges would rise above the water in other continents, but in Asia a fair-sized continent would still project above the seas. Even if the oceans rose twelve thousand feet, an island half as large as Australia would rear its giant form above the waters of Asia, and peaks higher than Robson would still be found in the Himalaya (him′ä-lā′yä) Mountains (Fig. 129).

The roof of the world. Tibet, the highest plateau, is called "the roof of the world." There it rises in the interior of the continent, the loftiest, windiest, and most barren highland on the face of the earth (Fig. 129). On the north and south it is held up by the highest mountain ranges in the world. West of it is the Pamir (Pä-mēr′), a centre from which radiate at least five giant mountain ranges. To the south-east extend the mighty Himalayas, which have one foot on the high Tibetan plateau and the other in the plain of the Ganges River, fifteen thousand feet lower. This giant chain, which in Canada would stretch from Winnipeg to Vancouver, is enclosed in icy armour, and raises its average peaks above the highest point in North America. Its lowest passes are at a greater height than Robson, the loftiest mountain in the Canadian Rockies. The range is crowned by the towering peak of Everest, whose snow-capped dome pushes up almost six miles into the heavens.

A range longer than the Himalayas, and forming the northern bulwark of Tibet, extends eastward from the Pamir. North-eastward runs a high ridge till Behring Strait is reached. Westward from the Pamir branch forth two ranges, which form north and south supports for the Plateau of Iran, come together again to form the mountain knot of Armenia, and continue as a complex plateau to the western end of Asia Minor.

Enormous gleaming glaciers fill the hollows of the sides of all these mountains. From the muddy feet of the glaciers, rivers leap full-grown into life and rush through gorges of awful depth. Down these the eye

pierces a thousand feet, frightened, but fascinated, by the picture of gloomy rock and gleaming green, of streams trickling or boiling through lonely glens, and of solitary villages shrouded in trees.

Two other plateaus are separated from the main interior highlands by plains that are painfully flat. The greater part of Arabia is a highland desert, whose dismal face is made of parched and burning sands alternating with still more dreary ridges of rock and flinty stones. The peninsula of India, called the Deccan, is the remains of a weather-worn plateau, which was old when Tibet, now the "roof of the world," was the bottom of an ancient sea.

People of the highlands. Asia, great in its mountains and plateaus, is also gigantic in its deserts. The great plateaus receive little rain, and on account of their height they are icy cold in winter, and all but the highest are scorched in summer by a nearly vertical sun shining from an unclouded sky. In the great stretch of highland from Tibet to Mongolia the miserly soil brings forth such scanty growth that the scattered tribes have to lead their flocks and herds from spot to spot as the grass springs up after each niggard shower. These are the *nomads* of the desert, who live in tents made of skin, and feed on the flesh and milk of their flocks of sheep, goats, horses, and camels. As nature is so stingy here, the different tribes are always striving for the scanty pasture lands. From these hardships and struggles the tribes develop great skill and forethought, and open-air life and long marches make erect, muscular bodies capable of great endurance. It is no wonder that some of these desert nomads have the most perfect physique of any people in the world, and that they have given to Europe some of its finest stock. As has already been stated, it was the overflow of these people from Central Asia that gave Europe its chief races.

Dwellers by the rivers of water. No rivers rise in these rainless regions, but many bubble forth full-born from the feet of the glaciers in the adjoining mountains, and wind through the desert, whose thirsty sands suck in the refreshing water until the stream loses itself in a frayed tangle of threads of water. Prosperous villages fringe these streams, and their life depends upon the irrigated land. No greater contrast is found in the whole world. On the one hand is the bare, deserted, scorching sand; on the other, cool refreshing water,

By courtesy of "The Times."

FIG. 131. A ROYAL TIGER HUNT

What king is shooting? How many elephants are there? Where does the driver sit? Describe the jungle. What do the drivers wear on their heads? This is a reproduction from a painting in a panel of the staircase in the palace of the prime minister of Nepal. Find Nepal on map of Asia (Map 46 in Atlas).

By courtesy of Japanese Government.

FIG. 132. JAPAN'S SACRED MOUNTAIN, FUJI

This is the highest peak in the country. What shape is the mountain? How are such peaks formed? What covers the peak? Why do you think this is a very high peak?

By courtesy of Japanese Government.

FIG. 133. JAPANESE AT HOME

What are the girls doing? What shade is their hair? Describe their clothes. What covers the floor? On what are they kneeling? What toys are seen? What furniture is in the room? Why are there no chairs? What decorations are on the wall? Are the windows made of ordinary glass? Find two drawers. Describe the stand with the urn on it.

and rich loam bearing on its bosom luxurious greenery. All this change is produced by the magic touch of water.

The fertile patches bordering these desert streams form pleasant oases for the weary traveller. There, on the harsh face of the vast tablelands, caravans wind their weary way for days and weeks through a changeless scene of dreary, burning red sand, dotted at best with thorny acacias or coarse spiny bushes. What a joy to the eye when they suddenly behold the date and walnut groves, the rice, cotton, and poppy gardens, contrasting in their emerald green, pure white, and deep purple with the dull, tawny surface of the sand! They seem to have reached a Garden of Eden in the midst of a barren wilderness when they pass from shimmering, blazing heat into the cool shade of graceful trees arching above the road, with a trickling stream like a silky ribbon along its centre.

Such towns and villages, with their square, flat-roofed, whitewashed houses glistening in the sun, are found in hundreds along the rivers; these get their water from the never-failing glaciers of the high mountains, and thread their courses to the hot interior, often to disappear exhausted in the greedy sand.

The continent of great rivers. Though other continents can boast longer rivers than Asia, none can compare with her in their numbers. Seven of the twelve longest rivers in the world are wholly in this continent. From the central highlands, among the wildest parts of nature, they hurl themselves down the slopes to the broad lowlands and wind their turbid streams across level plains to the sea (Fig. 135).

The largest plain in the world. Three of the great Asiatic rivers, the Obi (ō′bē), Yenisei (yen-ē-sā′ē), and Lena, begin as tumbling mountain streams, rage and thunder down from the central plateau, and then glide northward across the largest plain in the world. One can pass down these rivers across the plain, day after day and night after night, for hundreds of miles, first through level, grassy steppes, and then into the sombre pine forest. Each day one gets farther and farther from the abodes of men and nearer to eternal ice. Nameless rivers, springing from unknown depths of evergreen forest, cut through the high banks to pour their muddy water into the parent stream. At last the rivers emerge from the forest to the dismal tundra, bare of

trees and covered with dull moss and pallid lichen. Then in wide, barren, icy deltas they pour their cold waters into the Arctic Ocean.

The prairies of Asia. The steppe in the south of this great Siberian plain is dry and burnt in summer and autumn. Winter comes early, and then for five months howling winds sweep across dreary wastes of drifting snow. Spring comes with a bound and works wonders. As the snow melts, the water trickles and glides, and finally collects into streams. When the thirsty soil has sucked in the melted snow, the two magicians—water and sun—combine, and from the sterile, withered earth of autumn, grass and herbs shoot up as though by magic. Buds burst, flowers bloom, and the steppe decks itself in a glory of colour.

As in Canada, so in Siberia, these grassy plains are rapidly becoming wheat and pasture lands, and steady, plodding farmers, brought from Russia on the great Siberian Railway, are replacing the nomad herdsmen who for countless ages have wandered at will over these broad plains pasturing their sheep, goats, asses and camels.

The deltas of Asia. All the great rivers that flow east toward the Pacific, and south toward the Indian Ocean, have broad deltas at their mouths. For many thousands of years they have been lowering high plateaus, chiselling out fantastic gorges, and eating away massive mountains. The sediment from this destruction, which makes the rushing water tawny in the upper reaches, is deposited in the still waters near the mouth. So great is the erosion of these rivers that some of their deltas are larger than great countries like France and Germany. Three of these along the lower courses of the Amur (ä-mör′), Hwang-ho, and Yang-tsze-kiang (yang′tse-kē-ang′) form the plains of China. The two latter rivers find their way to the coast right from the heart of Tibet. No less than five of these deltas of first-class importance are found at the south; one at the mouth of the Mekong (mā-kong′) in Indo-China, one at the mouth of the Irrawaddy (ir′a-wod′i), one along the lower course of the Ganges, which melts above into the delta of the Indus, and one in the Persian Gulf. The first four rivers rise in Tibet, and to reach the plains below, gnawed awful gorges through the towering Himalayas and other mountains in their path. The fifth great delta plain, coming down to the head of the Persian Gulf, is wedged in between the plateaus of Arabia and Iran,

By courtesy of Korean Railways.

FIG. 134. TRANSPORTING BAGS OF RICE IN KOREA

How many bags does each man carry? What does each bag of rice weigh? How are the loads [illegible] When they wish to rest? To what nation do they belong? Describe their clothing. Of what is the roof of the house made?

By courtesy of George D. Hubbard.

FIG. 135. CHINESE GARDENERS BRING VEGETABLES TO MARKET

This is a branch of the Yang-tsze River in Central China. How wide is the stream? Of what are the rafts made? How are they fastened together? What vegetables do you see on the rafts? What kind of pole is in one man's hand? What use is it?

By courtesy of Manchurian Railway.

FIG. 136. THE HUM OF INDUSTRY IN PORT ARTHUR

On Map 44 in your Atlas find this port. In what country is it, and on what expanse of water? What railway has its terminus at this port? To what country does the city belong? What writing is on the post? How is the port lighted? How many bundles are on the carts? These bundles contain cocoons of silkworms gathered wild. How many wheels has each cart? What animal pulls the carts? Name all the kinds of freight on the wharf. How many steamers are in the harbour? What is the use of the carts near the electric-light pole? Name five different methods of transport shown in the picture. Describe the dress and appearance of the people. To what race do they belong?

and has been formed from the sediments of the Euphrates and Tigris Rivers, which are fed by the snows of the mountain-knot of Armenia. This flat alluvium has nourished the greatest empires of the ancient world.

Human bee-hives in the plains. Packed into these delta plains are the densest populations in the world. Indeed, it is safe to say that one-third of the human race obtains its living from the rich soils of these well-watered areas. As most of these plains have a dry and a rainy season, irrigation during the winter allows them to grow cool-weather crops, such as wheat, barley, and millet. The warm rains of summer excite a mushroom growth, and great crops of rice, cotton, opium, tea, jute, and indigo are harvested. Viewed from the hills above, the small, square fields make the plain look like a vast checker-board, which in the spring is spread out in a flat sheet of greenery, and in the summer is mottled by the white or purple of poppies. In autumn the people harvesting in the rice-fields below look like swarms of little black insects on a plate of gold.

The struggle for life among these dense populations is keen. Every block of the checker-board, consisting of a few acres, is a whole farm, and this has to feed a large family. Under such niggardly conditions it is no wonder that more than half of this swarming population is always hungry. Nearly all are primitive farmers, who use hoes instead of ploughs, sickles instead of binders, and a stick instead of a threshing-machine. A yard or so of cheap cotton cloth covers their nakedness, and a hut made of bamboo, and roofed with grass or rushes, scarcely protects their bodies from the weather.

Where men take the places of horses. Except in the plain of the Indus and Ganges, railways are almost absent from these deltas. Even roads are few, crooked, and bad. Goods are carried for hundreds of miles along narrow and irregular paths. The shoulders of men bear loads which in other countries are carried on the backs of horses and asses (Fig. 134), and wheelbarrows replace carts and wagons. Most of the great rivers, as they wind like sheeny ribbons across the plains, are dotted with boats of all shapes and sizes, which carry farmers' produce out to the great ports at the mouths of the rivers. The Hwang-ho alone is too swift and treacherous for navigation.

The most bustling river in the world. The great river of

China is the Yang-tsze. Rolling down from the plateau of Tibet, it flows through the most fertile district, and has a greater population crowding its valley than any other river. More than twice the population of the United States lives within its watershed. With its many large branches it has a line of navigable water that would stretch half around the world. No other river has so many ships or carries so much freight.

In the upper course of this river, among the hills, huts, looking like birds' nests, cling far up on its almost vertical cliffs in order to escape the floods, which sometimes rise ninety feet, while in its lower courses hundreds of thousands of families live their whole lives on small houseboats, huddled along the shores. Thousands of villages along its banks nestle among their bamboo thickets and trees, while cities stand guard at the mouth of every tributary. The greatest of these is the beautiful Hankow (Hän-kow′), the commercial centre of China. It is about six hundred miles from the mouth, at a point where two important branches join the main stream. At the mouth of the river in a splendid situation is Shanghai, the greatest seaport in the country.

A dense population with few cities. Though one-third of the people of the world jostle for life on these delta plains of Asia, yet there are few large cities. Europe, with a population less than is found in these plains, has seven cities larger than Hankow on the Yang-tsze and Calcutta on the Ganges—the two largest delta cities. Most of the large cities are on the coast and rivers, and as there are few manufactures, they are chiefly engaged in trade. The city streets swarm with people, have mean houses, and narrow, winding ways, festering with filth thrown from the houses and left to breed disease.

Rivers that never reach the ocean. Not one drop of rain that falls on over five million square miles, an area nearly as large as Canada and half that of the United States, ever reaches the ocean (Fig. 129). The rivers in these regions of internal drainage either empty into such lakes as the Caspian and Aral Seas or wind their way through the thirsty desert, where the gaping sands suck in the water eagerly. Such a river as it progresses becomes smaller and smaller, and finally frays out into a number of threads that lose themselves in the sand. The area of internal drainage is shown in Fig. 129.

By courtesy of P. Victor Co., Bagdad.

FIG. 137. AN ARAB BEAUTY

Women of the Mohammedan religion keep their faces covered when in the street or in public places.

By courtesy of P. Victor Co., Bagdad.

FIG. 138. AN ARAB BEGGAR AND A STORK

This poor man lives at Basra in Iraq. What kind of boots has he? What is on his head? Has he a beard? Point out signs of poverty about the man. How large is the stork? What kind of beak has it? The stork lives in cities and becomes very tame. As it eats garbage from the streets it helps to prevent their festering filth from causing sickness.

By courtesy of Hill Brothers.

FIG. 139. WHERE OUR DATES COME FROM

(*a*) A date garden. (*b*) Bunches of dates. (*c*) The date gatherer.

How are the trees arranged? How far apart are the trees? How tall are the trees? Where are the leaves attached to the stem? How large are the leaves? What is the appearance of the trunk? The marks are scars where leaves have fallen. Where is the fruit? How do the dates grow? What shape are they? How are they picked? How does the Arab climb the tree? What has he in his right hand? Of what use is the rope? Is there any grass or other vegetation except the trees? Why?

The most notable winds in the world. Over half the people of the world nervously watch for the beginning of the *summer monsoon*, for upon it everything depends. If it arrives in time and brings abundant rain, the countries will yield a bountiful harvest, but if the monsoon fails, crops refuse to grow, and grim famine stalks through the desolate land and blots out millions of lives.

The monsoons. The highlands of Asia become bleak and cold in winter, when the sun is far south, and cold dry air from Tibet blows in every direction. In China and Japan there is a west wind, in India and Indo-China a north and north-west wind, while in Siberia is a south wind. The same region in summer has an almost vertical sun, shooting burning rays through a cloudless sky against the desert soil. Then Central Asia becomes the hottest region in the world, winds blow in from the ocean, over the parched land, and bring rain to nourish the thirsty soil. These winds that blow inward from May to October, and outward from November to March, are called the monsoons. They make the climate of South and East Asia.

A change from death to life. In the monsoon region the dry season has reached its greatest intensity by May. Wind from the central plateau no longer cools the air. The burning drought of April has withered up the juicy vegetation of the jungle, and every tree has shed its leaves and looks as bare as those of Canada in December. Grass has burned to dust, while great cracks wind snake-like over the naked, parched ground. The soil on roads and fields has crumbled to a fine powder, which settles on the branches and thirsty brushwood.

Animals have also fled from the scene of desolation. Insects—their food gone—disappear under the dry ground. Butterflies, which recently lit up the forest with their brilliant splashes of colour as they hovered over the flowers whose beauty they rivalled, have forsaken the bare scene. Even the lowly snail, shut in his stony house, crawls to cracks in trees or soil, and seals up the opening in his shell. Birds are few and silent, and flit about furtively. Wild animals forsake the arid jungle to lurk near the water-supply of the village.

Man alone is left to endure, and even he has lost all force and vigour. The intense heat, the close murky air, and the leaden sky fill him with dullness and languishing. It is impossible to work and difficult even to rest.

The air is heavy with moisture, and the sky, which all the winter was of a brilliant blue, has assumed the sullen tint of lead; not a breeze disturbs the motionless rest of the heavy clouds that hang languidly above. Each day becomes hotter than the last, and the sky more and more overcast. The surf on the shore begins to rise, and towards the end of the month, when life has become almost unbearable, sudden lightning in the distance gives hope of a change. Now sheets of lightning flash through the clouded sky, and a crash of thunder ushers in the summer monsoon, which breaks over the thirsty land. It comes not in showers, not even as in the pouring rain of a violent thunderstorm in Canada, but in great sheets of water which flood the land and make the rivers burst their bounds. In Canada a thunderstorm is over in an hour. Not so the monsoon. For hours together, sheets of water bombard roofs and lash trees, making such a din that the voice is drowned and sleep impossible.

At last the sky is blue again. The air has a refreshing coolness, and even in a single day the bare earth is coated with green, the buds of trees burst forth, and like magic a mantle of leaves clothes the forest. In a week what was a parched desert becomes a steaming jungle, almost impassable with rank grasses and rushes. In ponds, which were clouds of dust, swarm insects, frogs and fishes that have crawled up out of the mud. The air hums with the vibration of insect wings. Glorious moths and butterflies show the sheen of their metallic tints as they flit among the trees, and the air is blithe with the song of birds, whose gorgeous colours rival those of the butterflies.

The blue sky and clear fresh air rouse man, as they do all nature, and he is soon busy planting his rice-fields, trimming his tea-shrubs, and preparing the soil for cotton, wheat, poppy, millet, and all the other wonderful crops that the monsoon countries bear.

It is no wonder that the monsoon is considered a good and great god, to whom thankofferings are brought by the poor peasants of Asia.

The fringe of Asia. Along the east coast of the continent is a great line of islands, standing like a wall against the Pacific Ocean. At the south this line expands into the greatest archipelago in the world, and is called the East Indies. Standing like the main tower at the centre of the eastern wall is the great Empire of Japan. On these small islands, for together they are less than half the size of the province

By courtesy of Government of Siam.

FIG. 140. ALL ABOARD! A RIDE ON AN ELEPHANT'S BACK

How high are the elephants? How many have tusks? Of what race are the drivers? They are waiting for passengers in order to give them a ride in the howdahs on the backs of the elephants. What other use is made of elephants?

By courtesy of Government of Siam.

FIG. 141. A WONDERFULLY CARVED SHRINE IN BANGKOK, SIAM

Find Bangkok in Map 44 of your Atlas. In what country is it? Name the river on whose delta it is. How many images are there? This is a Buddhist shrine, and Buddhism is the chief religion of the country. Notice the beautiful carvings and the grace of the structure.

of Ontario, there are packed almost seventy millions of the cleverest and most progressive people in Asia. Seventy years ago they were the most backward of all civilised peoples, but to-day they can take an equal place with all the great nations of Europe. Although chiefly a farming nation, the smoke from their factories already darkens the sky, and to-day two of the largest cities in Asia, Tokio (tō′kē-ō) and Osaka (ō-zä′kä), are in the flowery kingdom of Japan.

GEOGRAPHICAL PEPPER AND SALT

The busiest trade route in the world is the one in the North Atlantic between New York and Liverpool.

The goods passing through the Soo Canal in the Great Lakes weigh three times as much as those passing through the Suez Canal, but the value of the goods passing through the latter is very much greater than those passing through the former.

Sydney, Australia, and Rio de Janeiro, Brazil, each claims to have the finest and most commodious harbour in the world.

Detroit, Michigan, surpasses all other cities in the manufacture of motor-cars.

Belfast, Northern Ireland, leads the world both in the quality and quantity of linen goods manufactured.

The chief jute-manufacturing establishments of the world are located in Dundee, Scotland.

If you have a diamond ring, the probability is that the diamond was polished in Amsterdam, Holland; or Antwerp, Belgium.

Buffalo, N.Y., and Minneapolis, Minn., are the two greatest manufacturers of flour.

Everest (29,141 feet) is the highest peak in Asia, Aconcagua (23,080 feet) the highest in South America, McKinley (20,464 feet) in North America, Kilima-Njaro (19,600 feet) in Africa, Elbruz (18,171 feet) in Europe, and Kosciusko (7336 feet) in Australia.

Greenland (area 825,000 square miles) is the largest island in the world, and New Guinea (325,000 square miles) is the second largest.

CHAPTER XVI

AFRICA, THE CAKE-LIKE CONTINENT

The continent like a cake. Africa is a three-storeyed cake in which each layer is smaller than the one just below. The edge of the plate projects slightly beyond the lowest layer. The cake on its plate presents four steps, no matter at which part of the margin it is approached.

Africa is built of horizontal layers, and the interior in many parts is reached only by ascending several steep slopes separated by flatter stretches. A narrow coastal plain, like the rim of the cake-plate, runs around the edge of the great continent. In most parts this rim is very narrow, often not more than fifteen miles wide. Then the successive, steep slopes, like the edges of the layers of the cake, follow. Viewed from the sea these steps look like successive mountains running parallel with the coast. The frowning rows of receding slopes give the continent a forbidding look from every coast. They repelled the early explorers, and made the interior of Africa one of the last parts of the world to be traversed.

The coast of this continent is almost as unbroken by any bold projections seaward, as it is unrelieved by broad river mouths or inlets of any kind. Few harbours invite boats to land. Therefore every nick in the coast that can shelter a ship, has become a focus from which settlements have spread inward. Capetown in the south, the mouth of the Niger River in the west, Alexandria on the delta of the Nile on the north, and Beira (bā′rä) on the east, are such centres from which railways spread into the interior.

The rim of Africa, unlike that of the cake, is not round, but is the shape of a badly-formed triangle.

The top of the cake. The top of a cake is often wrinkled through unequal rising. The surface of the African cake is likewise uneven and partly for a similar reason, for internal forces have pushed some parts up higher than others. Across the north-west the snow-capped Atlas Mountains look down on the Mediterranean Sea. The whole

By courtesy of Netherlands Chamber of Commerce.

FIG. 142. DRIVING A BARGAIN IN JAVA

The lady is Dutch. What colour is the native? What has he on his head? Describe his hat which is on the ground. How does he carry his load? What fruit is he selling? What plants has the lady, in pots? Name all the evidences in the picture that the climate is hot. Find Java in Map 2 in your Atlas.

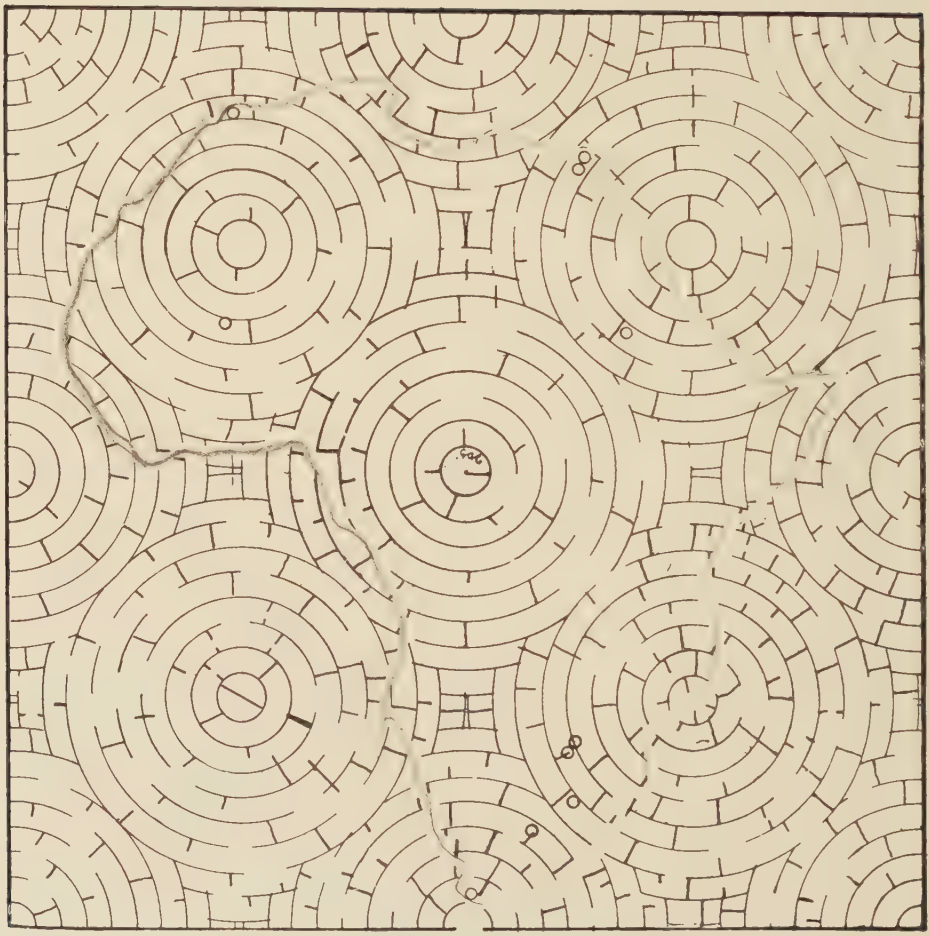


Fig. 143. The Hidden Continent

Enter at the opening of the maze at the bottom and pass through the gaps right round until you come back to the starting-point. Name the continent. The small circles indicate the leading cities. Find the names of these cities by comparing with Map 58 in the Atlas.

southern half is fully a layer higher than the broader northern half. Just as cracks occasionally appear on the surface of a cake, so two of the most remarkable rifts in the world run north and south through Africa. Imagine two great cracks only a few miles apart to run side by side for hundreds of miles, and the layers of rock lying between them to slip down, in some places several thousand feet. Such a gash in the surface is called a *rift valley*. Two such gaping wounds have rent the surface of East Africa. The lowest parts of these, filled with water, give Africa some of the largest and deepest lakes in the world. One rift valley runs through Lakes Nyasa (nyä′sä) and Rudolph (rö′dolf) and then through the Red and Dead Seas. The other farther west runs through Lake Tanganyika (tan′gan-yē′kä) and the string of lakes to the north of it.

The continent that is running dry. As the top layer of this African cake rose higher around the edge than towards the centre, water collected in great lakes in the interior. But great rivers on three sides of the continent have broken their way through the raised rim and come tumbling down in rapids and waterfalls over the edges of the successive layers, spreading out into deltas or estuaries on the narrow coastal plain. The Nile in the north is the great river of the past, the Congo in the west is the river of the future, and the Zambezi (zam-bē′zĭ) on the east is bound to play a notable part in the growth of Southern Africa.

These three giant streams, with the Niger and many others, breaking through the raised rim of the continent to reach the sea, have played their part in eroding unevenly the surface of the continent. Year after year and century after century they have been cutting their valleys deeper and wearing down the lip through which they drain the hollow basins on the top of the African plateau. As they do this the great shallow lakes of the interior shrink in size. In South Africa, regions covering thousands of square miles, which were occupied by lakes less than fifty years ago, are now nothing but a patchwork of marshes and swamps. Great areas of the Sahara Desert, which formerly were mirrors of blue water, are now covered with billows of drifting sand. Lake Chad (chäd) at the south of the Sahara Desert is also steadily shrinking in size, not because it is being drained to the sea, but because in this part of Africa the rainfall is becoming less and less. Thus we see that rivers and rainfall are conspiring to dry up the top of the African cake.

A Trip Down the Nile River

The puzzle of centuries. We are standing under a vertical sun in the heart of Africa. Stretched before us as far as the eye can reach are the blue waters of Victoria Nyanza (ni-an′zä), the source of the River Nile. For a thousand years explorers sought this mysterious lake and we are now on its fringing shore. With the exception of Lake Superior it is the largest mass of fresh water in the world. Green islands stud it on every hand, and the warmth of the sun decks every shallow with reeds and rushes three times as high as our heads. We dare not wander in these reedy marshes, for many a hungry crocodile and lumbering hippopotamus lurk in the mud ready to pounce on their prey.

A steamer takes us across to the north shore, and we enter the Victoria Nile. After passing roaring falls and brawling rapids we reach Albert Nyanza, a beautiful mountain lake with majestic snow-capped mountain peaks reflected in its placid waters.

The Mountain Nile draws away the crystal water from this lake on its long northern journey to the Mediterranean Sea. Soon the stream tumbles down from the last mountain in a rapid and then is navigable to Khartum, over twelve hundred miles away.

Floating islands. At first the Mountain Nile (Fig. 144) expands into broad, steaming swamps, crowded with tangled masses of rotting grass and reeds. As we advance, the channel becomes narrower and narrower, until at last the way is entirely barred by dense masses of floating grasses bound compactly together by a green slime of decaying water weeds. This is the *Sudd*. Much of the mass floats down from marshes in the tributaries and collects in the sluggish current of the main stream, fed gently from Victoria and Albert Nyanza, the chief reservoirs of the river. So dense is this floating grassy raft that oxen and elephants can walk over it. Crocodiles and hippopotami sometimes become entrapped in its meshes and die before they can loose themselves from its tangling embrace.

We have to cut our way wearily through this tenacious Sudd. In seasons when heavy rains strengthen the current, the Sudd is swept down-stream, and the channel may be kept clear for a few years, but gradually the clotted mass of green collects again to block the way.

The Nile's secret revealed. Now we have left the putrid Sudd behind and enter a part of the river bordered by forests of tall

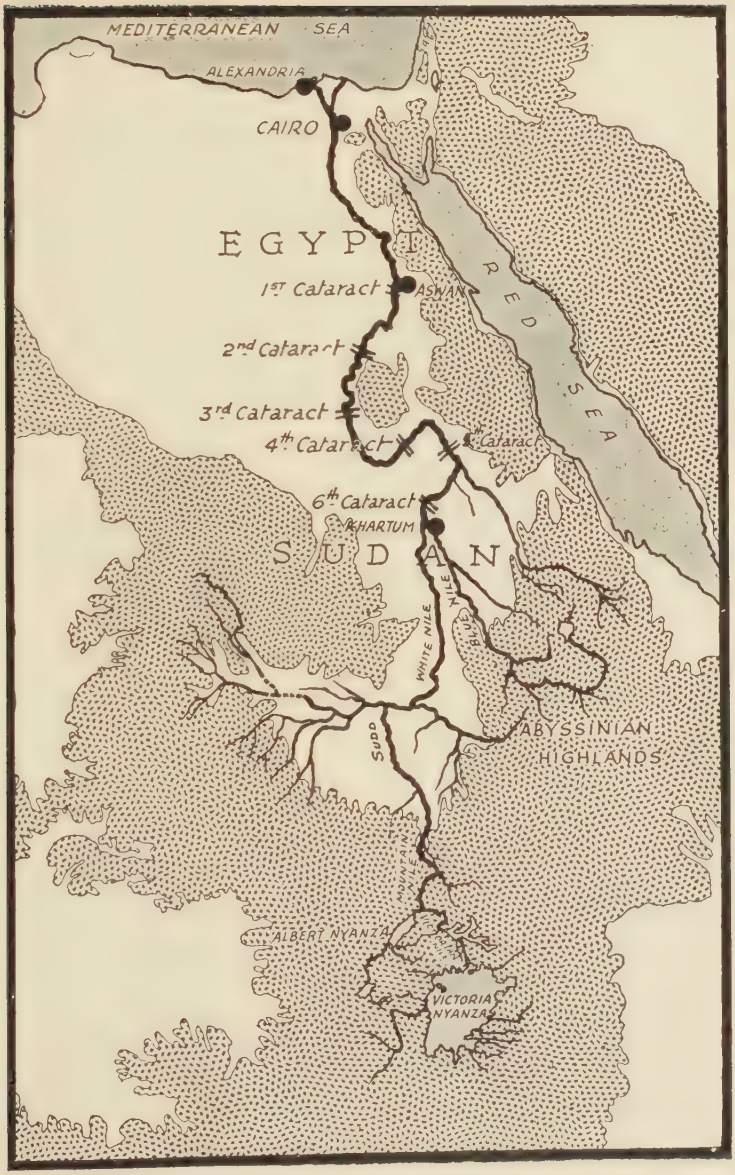


FIG. 144. THE MYSTERY RIVER OF AFRICA: THE NILE

The white part is lowland, the part tinted with coarse dots is highland. In what large lake does the Nile River rise? Under what names is it known from this lake to its mouth? How many tributaries flow in from the west? How many flow down from the Abyssinian Highlands? Why do none flow into it throughout its lower course? Into what body of water does it empty? How many cataracts has it? Are the highlands closer to it on the east or west?

FIG. 145. CANADA AND AFRICA

Africa is how many times as large as Canada? Since the area of Canada is about 3,600,000 square miles, how large is Africa?

trees trimmed with festoons of beautifully coloured vines. Soon a great stream from the east pours torrents of turbid water into the main river. We have now reached the White Nile (Fig. 144). As we near the city of Khartum (Char-toom′), the rich trees and grasses that decked its valley farther south have begun to disappear, and to be replaced by the harsh, leafless, spiny scrub of the desert. At Khartum a second great tributary from the east rolls in its flood of troubled, muddy water.

We are now on the last part of our trip. Lower down no stream flows in from the desert on the west, but on the east a strange stream is yet to join the main river. Yesterday it was a barren bed of baked clay and scorching sand. Along this blighted valley, winding across the yellow desert sands, no bush could boast a leaf, no tree could cast a shade. During the night a distant rumble was heard, which drew nearer and became louder, until at last it was a mighty roar. In the morning a mass of water was hastening through the valley. No drop of rain had fallen, no cloud had weakened the rays of the burning Egyptian sun. The night had been almost as sultry as the day, and yet this mysterious branch of the Nile had filled with water, which was hastening down to raise the main stream above its banks.

The key to unlock this mystery lies away to the south-east in the highlands of Abyssinia (ab′i-sin′i-ä), where this and other rivers emptying into the Nile from the east take their rise. There in May and June the hot moist winds from the Atlantic, after blowing across Equatorial Africa, are deflected up the plateau. As they cool, rain pours in torrents and sheets day after day. The water collects into the parched river valleys and rushes down the western slopes, pouring muddy waters into the Nile and making it overflow its banks. For long centuries the secret source of this water, that fills the Nile to overflowing, was well kept.

The cradle of the first civilisation. The river, which is still on the African plateau, now by means of a succession of rapids and falls, called the *cataracts*, cuts its way down to the lowlands. When the Nile is high these cataracts do not prevent boats from passing along this part of the river, but during the period from December to June, when the Nile is low, the rapids and falls cannot be traversed.

At Assuam (äs-swäm′), where the lowest cataract occurs, a great dam of granite has been built right across the river, which holds back the water when rains are abundant, and feeds it to the lower reaches of the river during the winter and spring when the water is low.

Below the dam large boats can run to the mouth of the river unhindered by rapid or shallow.

We have now entered Egypt. On every hand as we glide along we see ruins of massive temples and monuments, some of them almost seven thousand years old, built by the ancient Egyptians. On each side of the river is a low flat flood plain, from two to three miles wide, bounded by a steep rocky cliff, and beyond this the drifting sands and scorched rock of the lonely Sahara.

The real Egypt is this narrow winding strip of plain a few miles wide and seven hundred miles long. From an aeroplane it looks like a green snake winding across a plate of brass. Packed between the rocky cliffs is the densest farming population on the face of the earth. The land is lower than the level of the water and is protected from flooding by walls of mud. Each field is surrounded by a similar wall. As rain seldom falls, the fields are irrigated by allowing the muddy waters of the Nile to overflow. The mud fertilises the soil and the water gives moisture to the plants.

Three crops are grown during the year: wheat and barley during the winter, cotton and sugar-cane during the early summer, and rice and corn during the autumn. Before the Assuam dam was built little cotton and sugar-cane could be grown, as the water in May and June had sunk too low to flow over the fields.

At last we enter Cairo (kī′rō), the largest city in Africa. Its many high towers can be seen long before the city is reached. It is very unlike a Canadian city. The houses are usually white, and the people have dark skins, wear strange clothes, and talk in languages very different from our own. Though there are many beautiful buildings, there are also narrow, filthy streets, bordered by mean mud houses in which the native Egyptians live. Great swaying camels, laden with gums and dates from the oases and borders of the desert, jostle along the streets with long-eared donkeys. Huge white curved elephants' tusks and delicate fluffy ostrich feathers from Central Africa, meet silks and shawls from Persia and India in the markets. In recent years, since England has greatly helped Egypt, the cottons, garments, and metal goods of Europe are also sold largely in its shops.

People of many kinds mingle in the streets. A humble farmer from the country, looking much as he did seven thousand years ago, makes bargains with an up-to-date shopkeeper; a tall stately nomad from the desert walks along the street of the despised city with haughty dignity;

By courtesy of H. L. Shantz, Department of Agriculture, Washington, D.C.

FIG. 146. A CITY WITH A MILLION INHABITANTS

A white ant, or termite, colony. It is ten feet high, made of earth and wood, and the interior has many layers separated by spaces. These ants are a great plague, eating even wooden houses.

By courtesy of H. L. Shantz, Department of Agriculture, Washington, D.C.

FIG. 147. FRUIT MARKET IN ZANZIBAR

Find Zanzibar on the map of Africa. Name two kinds of fruit and one kind of nut shown in the picture. The long cylindrical objects piled on the mat are cassava, the fleshy roots of a plant from which tapioca is obtained.

a Jewish merchant and a Greek trader are both prospering as they drive hard bargains; an English traveller, an American tourist, and a French official give a Western touch to the scene.

The delta. But we hasten along. We are now in the delta of the river. The high cliffs on each side have disappeared, and a level plain, braided with branches of the river, stretches as far as the eye can see. Only two of these branches, however, are deep enough for ships, and we take the one to the left and soon cool breezes from the Mediterranean Sea beat back the stifling desert air. The flooded fields of rice, the snowy whiteness of the cotton pods, and the silky tassels of the tall corn are seen everywhere, while villages of mud huts shoot past. Now we move along a narrow canal, and at last a great city is seen across the flat landscape. It is Alexandria, the capital of Egypt for over a thousand years. Even to-day it is the busiest port on the north coast of Africa, and its broad harbour swarms with ships flying many flags, but the Union Jack far outnumbers any other. This port is the throat of Egypt. Almost all the cloth and metal goods used in the valley of the Nile pass across its wharves, and ships leave its harbour laden with cotton, rice, wheat, elephants' tusks, dates, ostrich feathers, gums, and many other products of field, forest, and desert.

Across the Greatest Desert

Over the Atlas Mountains. We land from our ship at the smart port of Oran (ō-rän′), which we are surprised to find has big business blocks very much like those of Toronto or Vancouver. Though we are in Algeria (al-jē′ri-ä), the French flag flying everywhere tells us that it is a colony of France, which lies just across the Mediterranean Sea.

Soon after we begin to climb the plateau to the south, beautiful landscape and fertile fields open below us. Well-kept gardens have trees laden with peaches and pears, and vines are heavy with clusters of luscious grapes. Oranges everywhere give a touch of colour to the greenery. Thick-leaved olive trees, with rough trunks and dusty branches, bear their grey plum-like fruits. Fields of wheat and barley, which grow in the winter, supply food for man and beast. As we move farther south the plateau becomes higher, the temperature cooler, and water scarcer. Here the dark-skinned natives pasture their sheep, camels and goats on the spiny shrubs and harsh, leathery herbage. When we reach the crest of the Atlas Mountains a new world meets our eyes.

To the north are lush fruit trees, smiling green fields, numerous herds, and little mud houses like white specks; to the south a dreary sea of sandy plains, and barren, rocky hills, boundless, colourless, noiseless.

Across the desert. Now we are about to launch out on the vast spaces of the Sahara (sa-hä′rä), the largest desert in the world. Over its face are tracks beaten flat by the traffic of ages, and along these lonely highways pass many camel caravans, exhausted by the dazzling, brassy glare of sun and sand. Human skeletons, polished white by the sand-blast of the desert, are strewn along these paths. Robbers, fearful sand-storms, starvation, and thirst lay low many a traveller.

The ship of the desert. The Sahara would have been an unknown land but for the camel, for this animal is well suited to desert life. His dull, brown colour protects him from his enemies, his horny mouth and lips allow him to eat the spiny-stemmed, leathery-leaved plants of the desert. His long neck assists him in seeing great distances, and also allows him as he travels to crop the scanty twigs over a wide strip on each side of the path, while the high arch over his eye protects him from the steady glare of the sun. But most wonderful of all is his stomach, which, besides food, can hold over a hundred pints of water, stowed away in a number of cells like honey in the comb. On his back are one or two lumps of fat, called humps, which act as food store-houses. On account of its hump and water-sacs, a camel can travel over the scorching sands under a blazing sun for several days without food or drink, and at the same time its milk is sufficient to feed one person as well as its young.

The caravan. Across the desert we went, but not alone. Hundreds of camels, loaded with goods to trade with the wild Berber tribes living in the desert and with the negroes in the Sudan to the south, marched in single file. Tall black-haired Arabs on the backs of the camels, or by their sides, carried rifles to protect the caravan from robbers, who lurk in lonesome places behind ridges of sand or in rocky clefts.

Over sand and rocks. Our journey was first over a sea of yellow sand, built up into hills by the wind. During the first few hours there were scattered thorn bushes from which gum arabic is obtained. These soon became fewer and smaller, then entirely disappeared. Later on, only scattered, dwarf, scrubby bushes struggled desperately for life in the fiery sand.

During the day the heat was so intense that no cloud or moisture

By courtesy of South African Railways.

FIG. 148. GOOD-MORNING! THIS IS A VERY SLIPPERY WORLD!

An ostrich's nest. Notice the mound of sand with the eggs in a hollow on top of it. How many eggs are there? How large are they? Find an egg that is chipping. Is the land fertile?

By courtesy of South African Railways.

FIG. 149. A SOUTH AFRICAN STOCK FARM

How large are the ostriches? What parts have no feathers? What parts are white? What is the character of the surface of the country? Are there many trees? How are the ostriches kept from wandering?

By courtesy of H. L. Shantz, Department of Agriculture, Washington, D.C.

FIG. 150. A FREIGHT TRAIN IN CENTRAL AFRICA

Through thousands of square miles of Africa there are no roads, and all goods are carried along narrow paths by porters. How many tins of gasoline are they carrying? To what race do they belong? Describe their dress.

By courtesy of Education Department, Zanzibar.

FIG. 151. COASTING ALONG EAST AFRICA

A native sailing-vessel. How does it differ from a Canadian sailing-vessel?

in the air withstood the burning heat of the sun's rays, and the hot sand was unbearable to the touch. But when the sun went down, the sand flung back its heat into the sky and became unpleasantly cold.

A little paradise in the desert. After watching the dryness, barrenness, and brownness of the desert for two trying, dreary days, a speck on the horizon caught our tired gaze. Was it an animal? No, it did not move. As hours of jerky swaying on the camel's back slowly passed, the speck became larger and larger. The camels put more spirit into their march as they sniffed the air with their nostrils. The speck began to take form and soon had a shade of green. At last we were near enough to get a sniff of the odour of flowers. What a lovely scent! Now we were in an avenue of graceful palm trees, sweet grass of an emerald green covered small fields, and little, flat-roofed mud houses peeped out from behind fruit trees.

This was an *oasis* in the desert. The rain that fell on the Atlas Mountains in Algeria (Map 55 in Atlas) three hundred miles away, sank into the porous rock and filtered underground until it found an opening, through which it poured out its limpid stream as a spring, giving life and greenness to the dead desert. By boring holes, many flowing wells were formed, which enlarged the oasis many times. Dates, olives, oranges, and lemons are grown, and wheat and barley in the fields. We learn that thousands of these oases are scattered over the Sahara, and many more have been formed by simply digging wells, often only a few feet in depth. Some day these sandy wastes, covering an area as large as Ontario, may be thickly dotted with these islands of green, each containing villages of contented peasants.

The rocky desert. Soon after leaving this oasis the cruel sands were passed and we reached a rocky part of the desert. We marched some hours over crisp gravel and rattling boulders, then great platforms of red and yellow rock stretched out before us, and travelling became more difficult. The thick pads on the feet of the camels, which spurned the hot sand, were cracked and cut by sharp rock. Great ravines gaped before us as we proceeded, and river beds, which told plainly that once this was a well-watered country, now were empty and dry across our path.

A city in the desert. After weary days and tired nights, at last came signs that our caravan was approaching a settlement. We caught sight of distant lines of camels creeping along like flies on a plate of brass, all going toward a distant point that could be seen in

the south. This point became a group of houses as we advanced, and by nightfall we were in the historic city of Timbuktu (tim-buk′tö). Nowhere else does such a city exist. There it stands, throbbing with life and sound, and the dead, voiceless desert on every side. Not even a trickling stream relieves the drought. Here shrewd traders from Egypt and Arabia on the east, and from Morocco (mō-rok′ō) and Tunis on the north, meet barbarous negroes from the interior and highly-civilised Hausas (hou′sä) from Nigeria. Nowhere in Africa do such strange varieties of people meet. Great swaying, ugly-tempered camels, still carrying their loads and exhausted from the desert trip, jostle in the narrow streets with the motley crowd.

To the north of Timbuktu lies the barren rainless desert, to the south the most productive part of Africa. The abundant rains and tropical heat quicken nature, and cotton, coffee, cereals, fruits, and nuts grow abundantly either in the fields or in the forests. Long lines of negroes with these products on their heads, march through narrow leafy tunnels in the dense forests toward Timbuktu. Others from both east and west guide their ships along the Niger River to the same trading post. The native goods are exchanged for dates, perfumes, gums, and other products brought in from the desert, and also for manufactured goods from the Mediterranean coast.

Although Timbuktu does not rest on the Niger River, it is so close to it that great stretches of navigable water on this wonderful river have greatly aided the growth of the city.

All aboard on the Niger. We decide to reach the coast by sailing down the Niger River. At first the stream is broad and deep with no rapids, but beyond the narrow cultivated strip on each side of the river there is still only the unfriendly desert, which has frowned on us for weeks.

In time, as we reach lower levels, where there is a rainy season, the bareness of the land is replaced by harsh spiny shrubs and coarse grass, in which are pastured sheep and goats. As we advance farther the grass becomes more luscious, and leathery-leaved, spiny-stemmed growths disappear before the increasing moisture.

At last we reach Nigeria, the most densely populated and highly civilised of all the native African states. As we drop down from one level to another by means of falls and rapids, we soon reach the tropical rain forest. Villages peep cosily from the protecting shadow of its depths. Children, naked as on the day they were born, dive and

By courtesy of Governor of Morocco.

FIG. 152. A TOWN BUILT OF MUD

This is a town in an oasis in the Sahara Desert. How wide is the street? What shape are the doors opening on the street? How close together are the houses? Of what are the walls and roof made? How thick are the walls? What shape are the windows? Have they glass in them? What shape is the roof? Notice the projecting ends of the poles supporting the roof. Do such roofs shed rain well? Why are the roofs built in this way? Why are the houses built of mud? What colour are the houses painted? Why? Find a man on a roof. Find two streets. What kind of trees are beyond the town?

By courtesy of Governor of Morocco.

FIG. 153. AN OASIS IN THE DESERT OF MOROCCO

How tall are the date-palm trees? How long are the leaves? Are there any other kinds of trees? Describe the dress of the man. What is the colour of his skin?

By courtesy of Tunis Government.

FIG. 154. HIGH-SPEED PLOUGHING IN NORTH AFRICA

Describe the plough. What animal is used? What is the person in front doing? Describe the olive trees.

swim near the edge of the wide stream. Crocodiles lie like stranded logs in the quiet margins. The forest itself is charming both in colour and form, and many shades of green are beautifully stained with contrasting masses of scarlet, yellow, and purple blossoms. Giant mahogany, growths of untold value (Fig. 171), are interlocked with graceful cotton trees; the delicate feathery leaves of the oil palm and the still more dainty raffia, blend with these giant trees to give exquisite forms.

The mangrove swamps. We are now in the great delta, which spreads its treacherous branches a hundred miles along the coast. The beautiful forest is replaced by coarse mangrove trees that stretch out their aerial roots in every direction. From the steamer it looks beautiful, but in reality it is as repulsive as any region on the face of the earth. Here is nothing but slippery mud grasping at the roots of the mangrove, and the air is putrid with odours of steaming muck and slimy rotting plants. A man finds it almost impossible to live in this region. If he tried to penetrate the unhealthy gloom, tangled bush would meet him at every turn. Millions of mosquitoes, disturbed in their foul abode, would settle on him and drive him crazy with their blood-sucking attacks. The few tribes that live in this sickening air are unwashed, barbarous cannibals. Even wild beasts seem to avoid its reeking loathsomeness, and only the hoarse shriek of a gayly-coloured parrot, or the bark of a monkey, pierces the gloom.

A forbidding coast. We are glad to escape from the mangrove swamps and to sniff in air from the sea as we reach the main mouth of the great river. But the sea looks forbidding. For fifteen hundred miles there is not a single harbour along the coast, and the waves are ever a wonder and a danger. The surface is never dead calm. The breeze from the sea ruffles it during the day and the breeze from the land during the night. Ships anchored one or two miles from the shore, which is as near as they can approach, are for ever rocking uneasily as they are loaded or unloaded. Just as unceasingly the long waves rolling forward gather strength and height as they advance, and meeting the ebbing water from preceding waves, coil, roll, and at once the long line of water is thrown with a furious roar against the beach. If it strikes a rock, a great fountain of spray and foam breaks the continuous line. The small European boat that dares to pass through these breakers is flooded with the first wave. Only craft with arched bottoms, specially constructed for the purpose, can ride successfully this dangerous surf.

CHAPTER XVII

TALES OF JOHN BULL'S FAMILY

THE STORY OF THE BRITISH EMPIRE

Rumours had come down to the settled country that a new goldfield had been discovered in Northern British Columbia, and the news caused excitement in the most distant parts of the British Empire. Men sold their houses, mortgaged their farms, borrowed money from their relations, and even sold clothes, jewels, and watches in order to join in the feverish rush to the goldfields.

The centre of their hopes lay far from the beaten paths. Rivers had to be traversed in canoes against treacherous currents and baffling rapids, deep yawning ravines had to be crossed, and rough plateaus with heart-breaking ridges and swampy valleys had to be conquered before the creek gravels with their yellow nuggets came in sight. Men from all parts of the earth pushed forward along the whole route to the beckoning gleam of gold. Many fell by the wayside exhausted and starving, some were drowned in the cruel currents of the mountain torrents, thousands turned back, and only the most brawny and dogged had reached a clearing by a stream within two days of the mining camp.

Eight men were gathered round the bright camp-fire, whose sparks shot up almost to the tree-tops. Though their clothes were in tatters, their boots almost gone, and their hairy faces brown and haggard, all were in high spirits, since before the week was out they would be washing the gravel through the sieves, and some might find in the bottom of the pan, yellow nuggets which would make them suddenly rich.

The natural leader was, to judge by his accent, an Englishman. As there came a lull, each thinking of the day after to-morrow, the leader suggested that as they would soon be scattered, and as the evening was still young, each should tell the story of the country from which he came, and the others should endeavour from each story to guess the name of the country from which the speaker came. The idea pleased them all, and these are the stories which they told.

By courtesy of Department of Education, Zanzibar.

FIG. 155. ACRES OF CLOVES

This scene is from Zanzibar, which should be found on the map of Africa. On what are the cloves spread to dry? How do the people turn them? Of what race are the people? Describe their clothes. What covers the roof of the shed?

By courtesy of Government of Tunis.

FIG. 156. TEACHING SCHOOL IN NORTH AFRICA

What do the pupils take off instead of their hats when they enter the schoolroom. With what is the floor covered? Name all the differences between this and a Canadian schoolroom.

The Shepherd's Tale

The country of sheep and rabbits. I've come from as far as any man can come. My country is a continent and the largest island in the ocean, and my home was once the land of gold but now may be more fittingly called the land of the golden fleece. Both our greatest blessing and our blackest curse are animals which the early settlers brought into our land. The sheep (Fig. 157) is the blessing and the rabbit (Fig. 158) is the curse. Over half of the people of my country are packed into five cities, each the capital of a state. There are few villages. Although my country has less than two-thirds of the population of Canada, two of my cities, Sydney and Melbourne, are much larger than your largest city, Montreal. My country has the strangest capital, which is called Canberra, has little or no population, no railway, and few buildings. As yet it is not used for governing purposes. Some of our habits of life would seem strange to you. The sun shines to the north of us, not to the south, and sun rooms are built on the north instead of the south side of our houses. In December and January we flee away from the burning thirsty heat of the cities to our summer homes in the mountains, or south into Tasmania (taz-mā′ni-ä) and New Zealand.

Can you guess the name?

A fertile strip. Our country can be divided into three regions. The first is a narrow plain along the eastern coast, where the trade-winds (Maps 3 and 4 in the Atlas) blowing in from the Pacific Ocean bring abundant rain, clothing its surface in a mantle of Irish green. In the north of this belt in Queensland all tropical products grow like weeds. Bananas in immense bunches, broad fields of cotton, and miles of sugar-cane block out the coastal lands. Farther south oranges and lemons ripen as well as in Florida, while in the south-eastern corner wheat, grapes, apples, peaches, and many other fruits come to perfection.

From grass to salt-bush. Behind the coastal belt is the main range of mountains, which runs from north to south. Wide plains, both east and west, run like a green sea to the base of the mountains, which rise dark and splendid against the sky. The plain, west of the Dividing Range as it is called, stretches for a thousand miles, and in a part of this near the mountains the rainfall is sufficient to make pasturage for the world's largest flocks of sheep (Fig. 157). As one advances westward, however, the pasture lands become drier and drier. Trees

disappear, and harsh spiny acacias take their place. The juicy grasses of the eastern coast give way to dull salt-bush with smooth, light-green leaves and salty taste. Long after the last shred of grass has turned to dust, this bush still stands erect to save millions of sheep from starvation.

Rabbits, rabbits, and still more rabbits. But even in these sparse pastures of salt-bush, where every sheep requires a square mile in order to live, the flocks are not left in peace. Tame rabbits that were set free, or escaped from the early settlers, have multiplied like flies and have spread themselves everywhere over the lean pastures to rob the sheep of their food. They are my country's greatest curse. In spite of wire fences thousands of miles in length, in spite of poison, traps, dogs, guns, stoats, weasels, ferrets, cats, and many other instruments of death, the meek rabbit, without means of defence, is too powerful for man's puny hand.

A land of suffering and death. At last as we advance westward we get beyond the spiny scrub and lonely bush into the hottest, barest desert on the face of the earth. It covers over half of my country and in the south and west is lapped by the sea for a thousand miles. The whole surface for many thousands of square miles is seamed with cracks as though the earth were opening her mouth and panting for water, but no water comes. Over this fearful desert sunrise comes with a fiery red glow, and a scorching wind sweeps across the sun-baked land, smothering everything with dust and grit. Though this land, where the drought king holds sway, is a land of suffering and death, brave explorers have faced its dangers. They describe the heat of noon as being so intense that the screws holding together their boxes dropped out, the teeth of their combs split into thin layers, the lead came out of their lead pencils, the hair of their heads ceased to grow, and their finger-nails became as brittle as glass.

The hated spinifex. But even this fiery furnace has its vegetation rooted deep in the burning sands. But what a plant! Great dull-looking mounds all covered with dust look like a mass of harmless, projecting rocks. But let man or beast brush against the dreaded spinifex, for such it is, and its torturing leaves, with their sharp, rigid spines, inflict painful wounds.

Water spouting from the desert. Who would suspect that even this desert, so dry and barren, has lying under many parts of its dreaded surface abundance of water? Over thousands of square miles,

By courtesy of the Government of New South Wales.

FIG. 157. FAT SHEEP READY FOR MARKET

Have the sheep horns? How will they be loaded on to the cars? Is this a city or country scene? What evidence is there that the land is not very fertile?

By courtesy of Australian Government.

FIG. 158. A PEST MADE PROFITABLE

A load of rabbits being brought to a freezing station. When frozen they are shipped to foreign countries. Many come to Canada. How are they packed on the wagon? About how many rabbits are on the load?

millions of gallons of clear water spurt out of holes bored through the hot crust. In many parts the water can be got a few feet below the surface, in others it is much deeper. Already these artesian wells have been the means of bringing thousands of square miles under pasturage, and as a result of irrigation great areas of the driest desert may be changed to green orchards and grain fields.

The desert retreats before man. My country is proud to be a commonwealth in the British Empire, my people are almost all British by birth, and our motto is progress and prosperity. Though our population is less than six millions, our sheep are unequalled in numbers and quality; gold, silver, lead, zinc, tin, and coal are mined in many parts; and in wheat production we are surpassed in the Southern Hemisphere only by Argentina. Though much of my country is marked desert on maps, the real desert is shrinking every year before the marvellous work of man. Artesian wells have cut off thousands of square miles from the desert and made them into pasture fields; in the region of the Murray and Darling Rivers and their tributaries, great stretches of what was a scowling, scorched desert are now a smiling plain with broad fields of wheat (Fig. 161), groves of fragrant orange trees, and green trellises, groaning beneath the weight of luscious grapes. As the country is more completely explored, many regions marked sandy desert are found to be so high that they catch rain and will be splendid pastures when railways make them more easily reached. No country in the Empire has a greater future than this vast southern continent.

The Tin Miner's Tale

The man who takes things easy. I am neither white nor black but a little brown man. I come from the south-east of Asia in the Malay Peninsula, and I too am proud to call George V. my king.

The rains pour down throughout the summer on my sultry land. My people are a mixture of brown Malays and yellow Chinamen. The Malays take life easily. Each family floods a few acres, hacks down the weeds, sticks seedling rice plants into the mud amongst the rotting leaves without ploughing or harrowing the soil, and the man of the house then sits on the top step of the ladder leading from the field to the raised house, and lazily smokes the pipe of peace and contentment waiting for the rice to grow. But he does not live on rice alone. Near

the house is a patch of bread-fruit, bananas, pine-apples, and a dozen other fruits that you know nothing about; as these ripen at different seasons they furnish a plentiful supply of food throughout the year. The rice is often neither tilled nor weeded. When it is ripe it is cut, but not with a binder. The Malay farmer cuts off the heads one by one with a knife, separates the grain from the chaff by pounding, and stores the paddy, as the rice grains are called, under the house. This rice, with the fruits, keeps the Malay's family well fed; a little rice is exchanged for a few yards of cotton, which will scantily clothe the grown-ups, and the children go naked. Bamboo poles, banana and other leaves, and reeds hastily cut from the jungle, can be thrown together to make a house in a few hours. Such is life in the hot, wet lands.

The man who counts. But the Chinese coolie's life is another matter. If a monument were erected in Malaya to the man who deserves most, it would not be to the British planter, or the easy-going Malay, but to the grimy, sweating coolies who have come from China to live in this country. The railways, the roads, the vast rubber plantations, the towns and cities are all monuments to their patient toil. They are the workers in this human beehive. In the hot, muggy air, under a withering sun, these little men work patiently on from dawn till darkness, with the sweat streaming from their almost naked bodies. Some can be seen bowed beneath two baskets of tin sand balanced on the ends of a pole over their shoulders. Although you could hardly lift one of the baskets, the Chinese coolie will carry the two twenty-five miles in a day. Others are busy cutting down the jungle, burning the trees and stumps, and planting rubber trees to form a plantation. The Chinese coolie also plants the coco-nuts, climbs the tall trees to cut down the nut when ripe, pulls off the rough husk from it in a minute, though it would take you almost an hour, and with one whack opens the nut to allow the flesh to be exposed to the sun in order that it may dry and form copra, one of the chief products of the country. He patiently carries in baskets the gravel to make the roads and to ballast the railroad, he cares for the beautiful gardens seen all over the land, and his patient magic touch makes more grow in one acre than you in Canada could grow in five.

The world obtains more than half of its tin from this country. The tin sand, which is mixed with the soil, is dug by the Chinese coolies with hoes, spades, or any tools which they can find, the earth is washed

By courtesy of Malay State Information Agency.

FIG. 150. WHERE THE SHINE ON OIL KEROSENE COMES FROM

A tin mine in Malay. Where do they get the mineral? How is it transported? What kind of people work in the mines?

By courtesy of Malay State Information Agency.

FIG. 100. AUTO TIRES FROM A RUBBER TREE

Tapping rubber trees in Malay. How large is the tree? Describe how it is tapped. In what is the liquid caught? Describe the costume of the tapper.

By courtesy of Australian Government.

FIG. 161. PLOUGHING ON A LARGE SCALE

How many ploughs can be seen? Describe the ploughs. How many horses pull each plough? Find the overseer. Describe the surface of the country. Wheat is grown on this land.

away with water, and the heavier tin sand is left behind. It is packed in sacks, carried by the coolies to the nearest station, and shipped to Singapore (sing-ga-pōr′) to be smelted into silvery, white tin.

My country, Malaya, is composed of the Malay States and the Straits Settlements.

The Boer's Tale

A dull, drab land. I come from a far-away land in the south of Africa, the Dark Continent. Of the seven million people in my country four-fifths are black natives, and the rest are either English or Dutch. The English live chiefly in the cities and towns, but the Dutch, called Boers, love the lonely places and live on their large lean farms miles apart on the highlands, which form the greater part of the country.

My native state is above all a dry land; except for a short season it is parched and thirsty, and instead of clear brooks murmuring through green meadows, the watercourses are bone dry, and both mountains and plains are iron hard, a pale empty brown in colour, with no motion but that of dancing whirls of grey dust. The monotonous stretches of sad-looking veld are broken by clumps of miserable brown grass and harsh shrubs, both of which bristle with spines and thorns. The sheep, cattle, and goats, which are the chief wealth of the farmers, find scanty fare on these rough plants. Few are the favoured spots in which a forest can be seen, and even single trees are scattered enough to be objects of notice. But all is not dull, for during the dry season, which lasts for the greater part of the year, it is a land of brilliant sun and keen, dry air.

Rain's magic wand. In the summer, before the rains, it becomes very hot, and a pitiless sun mocks the dry earth from a brass-bound sky. At last the rains come, but not as in your country. Whereas in Canada you receive your rain distributed through the twelve months, we have more fantastic tastes, enjoying either a feast or a famine; so we crowd our rains into a few days or weeks, and then give ourselves up to sunshine and dryness for the rest of the year. Further, our rains are not ordinary showers but torrential storms, that lash the land with their fury and are gone. But what a magical touch they have! The dusty river-channel becomes a raging flood, and the whole land changes as though a giant painter, with all the greens, had retouched it boldly. Every foot of sand is broken open by small flowering lilies and wax blossoms. Grey bushes and tufts of ghostly,

withered grass become green, juicy, and dainty to the taste of sheep and cattle, and to ears grown used for months to the dry rustle of the drought, the tingle of the water is sweet music. The veld rejoices and claps its hands, for the strain of the drought on the stock has been dreadful, but now the animals will have luscious pasturage, and the lonely Boer farmer is glad. But the rains are soon past, a steady sun shining through dry air again rules the scene, and gradually thirst and hunger resume their sway over the land.

A child plays with a wonderful stone. You may wonder why so many English were attracted to this drab land, but it contains some of the most precious of the world's possessions. One day long ago a traveller found a child playing with a strange stone. He offered to buy it from the boy's father, but the latter laughed at his stupidity in wanting to buy a small stone that was worth nothing, and gave it to him. He showed it to different merchants, who laughed at the idea of it being a diamond. Then the man showed that it would cut glass, yet he was still laughed at. He once lost it, and at last he sent it to Capetown to have it tested. The Governor bought it for two thousand five hundred dollars, and the traveller sent half of this money to the father who had laughed at him.

A round hole containing a billion. That was the beginning. A wild rush soon filled the country with eager diamond hunters, but the chief mines were found in a circular patch of blue earth on the open veld. Soon around this magic circle a village sprang up, called Kimberley (kim'ber-li), and nearly the whole of the world's supply of diamonds now comes from these mines.

The city of gold. But my country has a greater wonder than its diamond mines. Get on a train with me at Capetown, my country's oldest and most noted city, and let us ride over the monotonous veld. We pass scattered villages and many a Boer's home, miles from his nearest neighbour. At last we pass through the centre of diamond mining at Kimberley, and then speed to the north-east. At last after a long and dreary ride we know that we are nearing a great city; houses become more numerous, and many motor-cars speed over the dusty roads. Then we draw up at Johannesburg (Fig. 164) (yō-hän'nes-börg). Though this city is only forty years old it is by far the largest in South Africa, and its up-to-date buildings and broad streets compare well with those of Winnipeg or Vancouver. One wonders why men ever set down this hustling city in such a forbidding

By courtesy of Department of Education, Zanzibar

FIG. 162. A HOUSE BUILT LIKE A BASKET

This is a partially built house in Zanzibar. Find Zanzibar on the map of Africa (Map 58 in Atlas.) To what country does it belong? Of what is the framework of the house built? How are the parts fastened together? With what material do they cover the framework? How large is the house? Of what race are the people? Describe their dress.

By courtesy of South African Railways.

FIG. 163 A HOUSE LIKE A BEEHIVE

The home or kraal of natives of Natal. Find Natal on the map of Africa. (Map 59 in Atlas.) To what race do the people belong? What kind of hair have they? With what is their oval kraal covered? Find the opening. Are the natives of Zanzibar or those of Natal more highly civilised? Give evidence from the two pictures on this page to support your view.

By courtesy of Commissioner of South Africa.

FIG. 164. GOLD IS TAKEN FROM THE ROCK

A mine at Johannesburg. Find the pile of waste rock. What is the use of the tanks? (Page 48).

and desolate place. The earth is barren, the plants are grey, stunted, and thorny, and frequent sand-storms spread their dusty covering over everything like a pall. What are those immense dull-looking piles running in a line as far as the eyes can reach? What are those ugly-looking derricks in line with the piles? Above all, what is this deafening noise that beats against one's ears day and night? Those piles are the foundations of the city, those derricks its arms, and those dreadful sounds its heart-beat.

Stretching along that line for sixty miles is the world's greatest goldfield. It is the Rand. Thick layers of rock, tipped up on edge, run down slantingly into the earth, looking as though they were formed from a shingly shore in which all the stones were glued together. There is not a sign of yellow on their surfaces, nevertheless they contain the gold that has made Johannesburg and South Africa. These sloping rocks have been traced more than a mile into the earth. The deafening noise is caused by the machines that are pounding the rocks to dust, and the great piles are the refuse dust after the gold has been extracted. Almost half of the world's supply of gold comes yearly from these reefs.

Farming feathers. My country has many surprises. There are great live-stock farms, but instead of cattle and sheep, dignified black and white ostriches strut through the fields (Figs. 148, 149), and instead of the farmer selling milk and meat, he puts on the market expensive ostrich feathers.

Oranges, lemons, grapes, pine-apples, cotton, corn, even tea and coffee, are grown in the moister parts of my country.

Once we fought fiercely against Great Britain, but when we were defeated she was so generous and trustful that she won our hearts, and now we are proud to be a part of the British Empire.

The Dairyman's Tale

A romantic coast. My island home is a land of progress and plenty, situated eleven hundred miles south-east of Australia. The seas around are deep, blue, wind-stirred, sometimes stern with flecks of foam, but usually flashing with brilliant sunshine. The west coast is like that of British Columbia; inlets deep and calm succeed one another along the coast and pierce far into the steep and towering mountains, which are often capped with snow and seamed with glittering ice. Mantling the lower slopes is a dense tangle of almost

tropical forest, whose foliage is kept fresh and vivid green by frequent rains and gentle mists. Everywhere on this rough coast white torrents streak the stern mountain side, and plunging down, resound through the stillness of the great trees. Behind are mountain peaks clad in snow and ice, feeding many glaciers.

The world's best butter. But my island home has a very different eastern side. Here the mountains fall away into plains of varying width along the coast, and here the population is greatest. Broad sheep ranches creep up the sides of the mountains, and well-cultivated farms cover the plains. Choice dairy herds are the pride of my country, and our immense creameries make butter so choice and sweet that even after we have shipped it to England, almost on the opposite side of the world, it rivals the best that is freshly produced in Denmark, Holland, and Ireland. Even Canada is glad to take some of this delicious product.

The bewitching island. My country consists of the North and South Islands, as well as many smaller ones, and it is chiefly the South Island that I have been describing. The North Island is one of the wonders of the world. Its climate and plants are almost tropical, and great volcanic cones tower to the sky in majestic grandeur. The dense tangle that clothes them with green, rises bank above bank and tier upon tier, until the upper festoons of leafy masses seem to be held up by a magic hand. Volcanic fires shoot out here and there, geysers burst from the ground, sending up towering clouds of steam for hours at a time. Springs of boiling water, in which a man can cook his dinner, bubble up in thousands. Beautiful blue lakes fill the craters of former volcanoes, and hot fountains of water spurting up around them remind us of the hidden fires that still smoulder below.

Mining for gum. This bewitching island is still covered in patches by splendid kauri pine trees, and from their lofty roof and spreading branches to the rocks beneath, the air is all vital with the odour of resin. It distils from the leaves, collects in big lumps in the forks, oozes from the branches, and even blends with the earth beneath your feet. Indeed, the mining of kauri gum from the earth, which once was covered by these forests, is still an important industry in the North Island.

We are happy, contented, and prosperous, form a Dominion in the great British Empire similar to Canada, and our future is bright with hope.

By courtesy of Bermuda Trade Commissioner.

FIG. 165. WHERE THE EASTER LILIES BLOOM

Bermuda with its mild winter climate grows immense quantities of Easter lilies for the American trade.

By courtesy of United Fruit Company.

FIG. 166. A STUDY IN YELLOW, GREEN AND BLACK

Shipping bananas in the West Indies. To what race do the workmen belong? What two methods of transporting bananas are shown in the picture? How high is the banana plant? Where does the bunch of bananas grow? In what direction do the bananas point when on the tree? How large are the leaves? How are they arranged on the stem?

The Banana-Grower's Tale

A tropical island. I came from the largest British island in the West Indies. My island home, shaped like a turtle, has its blue peaks rising over a mile above the surface of the ocean. More than one hundred streams tumble down from the mountains through deep ravines, finally to run across a narrow plain to the Caribbean (kar-i-bē'an) Sea. At the two rainy seasons in May and October these streams are rushing torrents, but at no part of the year are they of much use for navigation. The chief charm of my island is its beautiful and varied climate. Even at the coast it is seldom very hot, and a man can have almost any climate he wishes according to the height at which he settles.

Our chief glory is vegetation. Noble trees, gay with showy flowers, feathery ferns of all shapes and sizes, gigantic water-lilies, with leaves as large as tables, are blended in the grandest profusion. But the chief wealth of the island is its fruits; bananas, oranges, grape-fruits, pine-apples, coco-nuts, and a dozen others hardly known in Canada grow in our gardens; ginger, pepper, allspice, coffee, and cocoa are cultivated in plantations; and mahogany, ebony, and logwood are cut in the forests.

Canada's little brother. A few thousand whites and seven hundred thousand negroes make up our population. Earthquakes and terrible cyclones have destroyed our crops and even our houses and towns more than once, many hard times have we had, but now we are on the sure road to progress. We look upon Canada as our big brother, since Great Britain is the mother of us both.

The Black Man's Tale

Negroes and nuts. I speak for the people of the British Empire in West Africa. Our possessions increase in size from west to east; Gambia is a narrow fringe around the lower course of the Gambia River, Sierra Leone (sē-er'rä lē-ō'nē) is larger, Gold Coast and the territory to the north of it is still larger, and Nigeria is the largest; it is also the most populous of all the British possessions except India and has great resources. In all of these territories the landscape shows a line of white surf, a ribbon of yellow sand, and a wall of dark forest. This forest, two hundred and fifty miles wide, is

cut through by many broad streams which spread out in unhealthy deltas all along the coast. In many parts the forests are impassable except by means of these streams, and no man can stand the hot humid climate reeking with disease, except black savages so uncivilised that they do not hesitate to eat their fellow-men.

From these forests are obtained some of the chief products of the country. Palm nuts in great bunches are nipped from the tops of tall trees and carried to the villages, where they are husked by the women. These husks are pounded and boiled in water until the oil is melted out of them and floats on the surface. The nut itself is broken and the dried kernels are shipped to Great Britain, where oil is extracted from them and the remainder fed to stock. Thus palm oil and palm kernels are obtained from the same nut. Another nut to which is attributed almost magical power is the cola-nut, collected from the forests of the western states and imported into Nigeria. These nuts are chewed by the natives in order to withstand hunger, thirst, sleep, and fatigue. They are largely exported to Europe also, to be mixed with chocolate. From these forests are cut great logs of mahogany, which are brought down to the sea, cut into boards, and shipped to Great Britain and Canada.

Unequal war with weeds. The clearing of these forests for farming is a heart-breaking task. The intensely humid heat, heavy rains, and fat, black earth stimulate such rapid growth that a cleared field, unattended for a week, becomes a jungle. Farming thus becomes an unending fight with weeds. However, where such land is tilled, plants grow like mushrooms, and farming is making rapid strides under British guidance. For example, a few years ago practically no cocoa was grown, and now the Gold Coast alone supplies half the world. The growth of pea-nuts, usually called ground-nuts, is also increasing very rapidly, especially in Gambia.

High-class negroes. As one goes farther inland the levels become higher, the rainfall less, and the forests more open. Trees are replaced by grass, and still farther inland the grass gives place to such mean growth as spiny acacias, and fertile soil becomes desert sand.

In these higher lands are found superior types of negroes, who live in great cities whose streets are lined with mud houses surrounded by walls. They have great flocks of cattle, grow excellent cotton, and until recently wove on hand looms strong textiles that clothed the natives of the whole Sahara region. It is in Northern Nigeria that a

By courtesy of Commissioner of South Africa.

Fig. 167. Having a Bath in South Africa

What animals are shown? How many of them are seen? Describe the grass. This is the Komati River in Transvaal.

By courtesy of Director of Education, Gold Coast.

FIG. 168. MAKING COTTON CLOTH IN BRITISH WEST AFRICA

What is the woman doing? Describe the weaving loom. Notice how the man uses his toes. Notice the large tree behind them. What clothing do they wear?

special effort is being made to grow cotton in such quantities that Great Britain will not depend on foreign countries for her supplies.

But it is not for products of the farm and forest alone that my land is valuable to the British Empire; tin mines have sent their shining metal to the mills of England for many years, and quite recently the coal mines of the same country have grown so rapidly that to-day they supply fuel for all the railways and boats along the Guinea Coast. Gold is still mined in the territory north of the Gold Coast, and other minerals no doubt will be drilled from the rugged rocks when more roads and railways open the arms of my country to receive the white man.

Nigerians and Canadians. Nigeria should be of special interest to Canadians and to the other countries of North America. The forefathers of the negroes whom you see upon your streets were, two hundred years ago, torn from their homes and families in my country by cruel Arab raiders and shipped across the ocean to be sold as slaves to work on the plantations in the Southern United States and the West Indies. If you came to my country you could still see coloured men tramping through the forests, paddling along the rivers, and working in the fields, whose fuzzy hair, thick lips, big white eyes, black faces, and light-hearted, lazy manner at once would remind you of the coloured men you see upon your streets.

The Sikh's Tale

The muffled tread of countless men. My country swarms with life. Though only half as large as Canada, three out of every four of the subjects of King George V. are huddled within the towns and villages of this wonderful land. Men, women, and children crowd everywhere, and the narrow streets of the towns are filled from wall to wall with sad-faced men jostling one another. From many a walled city, a motley, coloured stream sways forward from every gate to the country beyond. This stream, like a vast funeral procession, is composed of brown-faced men, either trudging out to go beyond the horizon, or tramping in to blend with the swaying, steaming masses of men and animals in the streets. From dawn to dark the muffled tread of shuffling feet never ceases, and at night dark weary forms huddle together on the mud floors of every hut within the endless

miles of streets, and there is no dark alley without the sleeping figures of homeless men.

Out in the country they are on the paths everywhere. They dot countless fields with colour as they work among the crops. Even in the dense lonely jungle a man does not go far before he catches the flash of a white cap or a blue shawl.

A crowded zoological garden. The surging flood of animal life rivals the human. Camels swaying from side to side, donkeys buried under loads, bony cattle hitched to miserable carts, fight for their passage through the streets; hungry, homeless dogs in every lane eat ravenously the filth thrown from the windows; gloomy vultures perch on the gates, grey-headed crows crowd the open places like sparrows, and gay noisy parakeets jabber at one another in the trees, which also resound with the chatter of sacred monkeys of various shapes and sizes.

Animal life in the country is as thronging and more varied. The swampy lands hum with fiery insects, venomous snakes lurk everywhere ready to deal death to the careless, while the waters of the deltas are alive with crocodiles, snakes, and great frogs basking in the tepid mud. As one moves through the forest, birds of bright colours spring up at every movement, butterflies as large as birds flutter their glorious wings of azure and gold among the tree-tops, and noises innumerable tell the tale of countless other creatures in a throng of living things that haunt the forest.

As we travel on the back of an elephant through the jungle where mighty grass blades rise fifteen feet high, great clouds of insects leave a trail behind us as we advance; pea-fowl, partridge, wild-fowl, and quail, with startled squawks, flutter above the jungle grass and skim away to settle down again in the sea of green. At every elephant footfall, a rustle in the dense grass, a frightened shriek, or a furtive dart tells of deer, wild pigs, jackals, foxes, wild cats, hyenas, wild dogs, and many lesser creatures that dart through the lower growth unseen. If one could look minutely among the close network of matted grass, both living and dead, that carpets the humid soil of the jungle, a crawling, wriggling, darting mass of lizards, snakes, mice, insects, spiders, and every other creeping thing would stand revealed.

Such is the world of throbbing life that is packed in the Indian Peninsula.

The Indian crazy-quilt. My country is a land of colour, but alas!

By courtesy of Commissioner of South Africa.

FIG. 169. A STUDY IN BLACK AND WHITE IN RHODESIA

Find Rhodesia on the map of Africa. The Blacks are many times as numerous as the Whites and they are used for all kinds of work. This negro is a nurse-maid.

By courtesy of Education Department, Zanzibar.

FIG. 170. HUSKING COCO-NUTS IN ZANZIBAR

How are the men dressed? Describe the method of husking. Where are the husked nuts piled? Where the unhusked? Describe the coco-nut trees.

By courtesy of Director of Education, Gold Coast.

FIG. 171. MAHOGANY LOGS IN WEST AFRICA

How large are the logs? Into what shape are they cut? How are they held together?

also a land of squalor, sorrow, and poverty. The plains and hillsides during the dry season are dreary brown with withered plants, streaked with roads of deep white dust. The cultivated fields of cotton and wheat stand out as slashes of daring green against the dull background. Dotted thickly over these plains are villages full of colour, towns with shining white houses, flashing domes, and glistening spires. Within the village, dull, shaded lanes contrast with gaudy houses. Above all, the surging humans in the streets give a mottled mass of colour. It is a land of many showy costumes, brilliant headgear, and glittering ornaments of gold and silver. In the bazaars, or streets of shops, all the colours of the rainbow flash out, made clearer by the background of chequered shade and the browns of mere dirt and grease.

India's festering sores. The bony bodies of half-starved men and women with grimy faces and sad dull eyes that never smile, naked uncared-for children, dull narrow streets strewn with festering filth, piteous clusters of hovels daubed with mud, which one could not dignify with the name of hut, open spaces that should be green with grass and shaded with trees, covered with dust and dirt and overrun with skinny dogs, thin fowl, and half-starved cattle,—these are the piteous pictures that make up a village.

The farms in the country are despairing, irregular patches snatched from the waste, the fields are neglected, and the cultivation crude. Instead of roads you see uncertain tracks of dust wobbling drunkenly through the coarse grass of the jungle.

India's jewels. But India, my country, is a land of contrasts. The most gigantic mountains that seam the earth look down on a dead level plain that one could traverse for twelve hundred miles without finding even a small pebble. At the west of this great plain rain seldom or never falls, but at the east the greatest torrents on earth deluge the land. Besides these mean towns and still meaner villages, there are cities, such as Calcutta and Bombay, whose main streets and squares rival in beauty and cleanliness, and whose buildings rival in dignity, those of the great cities of Europe and America. If my country has mean hovels, smeared with mud and dung, it has temples and monuments of the purest marble carved with the most chaste ornaments and set with jewels from every land.

The British touch. Though my country is still poor and sad, it has wonderfully improved under the rule of Great Britain during

the last two hundred years. Then the whole country surged perpetually with civil war and was broken into a hundred brawling countries; now it is united and at peace. Then great famines reared their hideous heads and swept away millions of people; now famines are almost gone. Then disease and plague stalked through the land, and whole villages and towns died off like flies; now conditions have greatly improved and plagues are almost conquered. And these changes have come since India became a part of the British Empire.

The Sailor's Tale

I come from a breed of sailors. My country is an island, warships guard its every coast, and its ships of commerce sail every sea and enter every port. As we love the broad, deep sea, and its angry waves, I am going to ask you to get on board a ship and take a sail round my country. As the island is long and narrow and many inlets push far up into the land, every inhabitant can almost smell the salt breeze, and it is possible to visit most of its wonders by means of a boat.

The capital of the British Empire. Let us start from London, the largest and most historical of all cities. Packed into the houses of all shapes and sizes that line its irregular streets are over seven million people. Until one hundred years ago farming was England's chief industry, and the most fertile land was and still is in the south, with London at its heart. As commerce grew and the furs and gold of America, the spices and jewels of India, the carpets and silks of Asia Minor and Persia began to reach Europe by water, London was favourably situated to receive these valuable products for distribution. She stands on the wide estuary of the Thames River, looking straight across the North Sea to the mouth of the Rhine and other rivers that carry commerce into the heart of Central Europe. All goods for the rich, dense populations of these river valleys pass through the Straits of Dover and hence through the mouth of the River Thames. As British ships have carried the freight of the world for a hundred years, it is no wonder that the wool and mutton of Australia, New Zealand, and Argentina, the rubber of Brazil, Ceylon, and Malay, the tea from Burma and Ceylon, the coffee from Brazil, and the spices from many parts of the world, are first unloaded at the great warehouses that hem in the seventy miles of docks of London and from these are distributed throughout Great Britain by means of the net-

In courtesy of E. Smith.

Fig. 172. Coming to Town in Madras
What is the man carrying? Describe the wagon.

In courtesy of E. Smith.

Fig. 173. Making Pottery in India
What supports the vessel which he is making? What is the use of the wheel? Describe the garments of the man and woman.

By courtesy of B. Smillie.

FIG. 174. WATERING THE LAND IN INDIA

They are lifting the water from the stream into the irrigation trench. What kind of buckets do they use?

By courtesy of P. Victor Co., Bagdad.

FIG. 175. "HEADS" OF LETTUCE IN BAGDAD

The women are carrying baskets of lettuce to market. How do the costumes differ from those of Canadian women? Of what are the baskets made?

work of railways that branch out from the city. These products are also sent from London to the dense populations of Central Europe. This immense trade has made London the banking centre of the world. But more than anything else, the great extension of the British Empire has aided London's growth.

As we sail down the River Thames we see docks on either side and ships from every country unloading their cargoes. To the south of the river are the finest fruit orchards and hop gardens in the country, but the North Downs, low hills to the south of the River Thames, shut them from our view.

The harvest of the sea. At last we sail out into the North Sea, which washes the east coast of England and Scotland. As we turn to the north, fishing-boats are seen gliding out from every inlet along the coast. Some are brave little things controlled by a couple of sturdy fishermen, while others are large and powerful trawlers and drifters that may steam almost to the island of Iceland in the north, or to the coast of Morocco in the south, in order to reap the harvest of the sea. Several of the largest harbours, such as Grimsby, Yarmouth, and Hull, swarm with fishing-boats, and the wharves each day are a slimy, wriggling mass of fish, which have been rushed in from the sea to be shipped in ice to the towns of Great Britain.

A varied coast. At first we pass by the finest wheat-fields of England. Rainfall is about as great as in Ontario, growth is rapid, and as the British farmer tills the land with great skill, he harvests far bigger crops per acre than is done in Canada.

We soon come to the Wash, a wide, shallow bay surrounded by the fens, low, marshy regions as flat as your Canadian prairies. Beyond the Wash the surface becomes higher and soon another estuary opens before us. As we pass up the River Humber, for such it is, we come to the city of Hull, one of the most important seaports. Great boxes are being carried on to ships for export, and these we find contain bales of cotton and woollen cloth. This woollen cloth, unrivalled in its quality, was woven in the mills of Leeds and Bradford, and is in demand everywhere where the finest woollen and worsted are used. The cottons come from Lancashire still farther west, and this county has grown so rapidly that the towns formerly dotted over its surface have almost joined to make one great hive of industry. As there are many great coal mines west and south-west of Hull, this town also exports much of this fuel.

As we go farther north the sky ahead looks ruddy in the evening.

Soon the ruddiness turns to lurid red flames shooting up through hundreds of chimneys, which are scattered all around the town of Middlesbrough (mid'lz-brō). These are blast-furnaces for smelting iron, hundreds of which are found in this district.

The estuaries. Again for the fourth time we enter an estuary lined with towns. These rivers are not large, for you can readily see that since the whole island is only one-fifth the size of Ontario, the Thames in England is much smaller than many of the rivers of Ontario. Nevertheless these rivers are always well filled with water, because they rise in the highlands, which receive heavy rainfall throughout the year. As their mouths are wide, and tides scour them clean twice every day, the water is deep and they make excellent harbours. These estuaries push far into the interior of England and Scotland, and bring every part close to the sea, and they have been mighty in making Great Britain the mistress of the seas.

We enter the mouth of the River Tyne, and both shores bristle with factory towns blending with one another, so close are they together. This small stream is as crowded with ocean steamers as a street with motor-cars. The steamers are heavily laden with iron manufactures of every kind, and with vast quantities of coal from Newcastle, the largest city on the river. Some of the largest merchant ships and warships have been constructed in the immense shipyards along this river.

When our ship has wormed her way back through the swarm of great steamers to the mouth of the Tyne, we again turn north. The land is now high and the Pennine (pen'īn) Chain can be seen in the distance as a gentle range of mountains running north and south through the centre of the country. Stock here replace grain crops, and near the coast many herds of choice cattle graze on the pastures; back farther on the less fertile slopes of the Pennines are flocks of sheep with fine coats of wool. Indeed, it was this local supply that first made Leeds and Bradford manufacturers of woollen goods, though now only a very small part of their supplies comes from this region. After a few hours' steaming, the mountain crest rises higher and spreads out into a cross-range. These are the Cheviot (chev'i-ot) Hills, which form the boundary between England and Scotland. Many a time in the past have fierce fights taken place across this border. The land still remains high as we skirt the shore, and while we pass no large cities, there are a number of towns noted for their weaving of woollen cloths and

By courtesy of Intelligence and Tourist Bureau of South Australia.

FIG. 176. A SEA OF WOOL

The wool market at [illegible] the wool? Why is each open at the top?

By courtesy of New South Wales Government.

FIG. 177. TRAVELLING IN THE AUSTRALIAN SCRUB

How many oxen pull the wagon? How are the oxen hitched together? Describe the vegetation. What has the man standing to the left, on his shoulder? What is the little girl carrying? What signs are there that it is hot

especially tweeds, and strange to say, although these towns are along the River Tweed, the material is not named from the river.

The Scottish Lowlands. Now we are entering a wide opening, the Firth of Forth. The land is low on both sides and as we pass farther in we come to one of the most important districts for live-stock. Here also, around the humble homes of the Scottish farmers, are the best-kept gardens on the whole island. A seam of coal, which probably dips right under the Firth of Forth, appears both to the north and to the south, producing valuable coal mines. Consequently there are important and varied manufactures growing up in the towns along the firth. Metal, glass, linen, jute, and linoleum are a few of the most important. On the south side of the firth stands Edinburgh, one of the most charming cities in the world, with which are associated many of the most romantic events in the history of Scotland. This beautiful residential city is a centre of learning, literature, and art. For centuries it has been well known for its publications of maps and books; there are also large distilleries. The old parliament buildings and Holyrood Castle, the royal palace, are still attractive and beautiful structures.

We are loth to head our boat for the open from the Firth of Forth with its beauty, charm, and dignified restfulness. As we go farther north we soon come near the mouth of the River Tay, and though we know that Dundee with its large jute, linen, and jam factories is well worth seeing, we pass it by for lack of time.

The Scottish Highlands. Soon we meet a frowning rocky shore backed by low hills, which extend as far as the eye can reach. We are now coasting along the Scottish Highlands, which are composed of high ridges, often with broad tops, and separated by valleys which have been formed by the erosion of the streams that wind along their bases. Private estates, set apart as hunting-grounds for deer, occupy a large part of this region. In the valleys are the low stone cottages of the thrifty Scots, who make a living tilling small bits of niggard soil, fishing on the coast in summer, and tending their flocks of sheep. These people are a fine hardy stock, but unfortunately are becoming fewer year by year, as many migrate either to the cities or overseas.

In time we round the north of Scotland in stormy weather, and as we pass Cape Wrath in a fierce gale, we well understand the feelings of the sailors who first gave it that suitable name.

We come down the west coast of the Highlands, and the scenery here is far wilder than on the east coast. It reminds one of the west

coast of British Columbia. Long, narrow inlets with steep, rocky shores worm their way far into the granite rock, while strewn along the coast are many rocky islands, as though great fragments of the Highlands had been hurled by some giant earthquake far out into the Atlantic Ocean. If we went into the country we would find many beautiful little lakes set like gems in the bottom of the valleys. These delicate little bits of turquoise, set in among wild hills clothed in purple heather and sombre forest, make a scene of rugged beauty difficult to surpass.

As we leave these unspoiled scenes of nature and enter the Lowlands once more, the contrast is great. We are now steaming up the River Clyde. Though the map marks towns along its banks, it looks more like a continuous mass of houses, factories, schools, churches, and parks. Immense dockyards, capable of turning out the greatest ocean greyhounds, line the banks. The masses of buildings ahead spread miles to the north and south of the river, revealing one of the giant cities of the island. In less than an hour we arrive at busy Glasgow, which surpasses in size every other city in the British Isles except London.

We again point our prow to the south and it is not long until we enter the North Channel, from which in clear weather one can see Ireland on the right and Scotland on the left. We enter only one port in Ireland and that is Belfast, the capital of Northern Ireland and the largest and most progressive city in the island. Here is made the finest linen, and in the shipyards are built some of the largest ships afloat.

The Lake Country. We soon pass the Isle of Man, which has its own parliament though it is a part of the United Kingdom. To the east rises a complex mass of mountains, and what a brilliant blending of beauty spots they contain! Soft valleys, stern heights, tranquil lakes, rippling streams, and turbulent waterfalls form that rugged and beauteous region of Cumberland known as the "Lake District." It receives the heaviest rains of any part of England.

Liverpool. After passing this charming bit of scenery, where man has done so little and nature so much, it is a startling change to sail into the mouth of the River Mersey and dock at Liverpool, where immense warehouses, numerous tall chimneys, and a sea of masts impress upon us the greatness of man's work. As we stand on the wharf, towering steamers, with cabins furnished like palaces, slide majestically up to the docks one after the other from every part of the world. Out

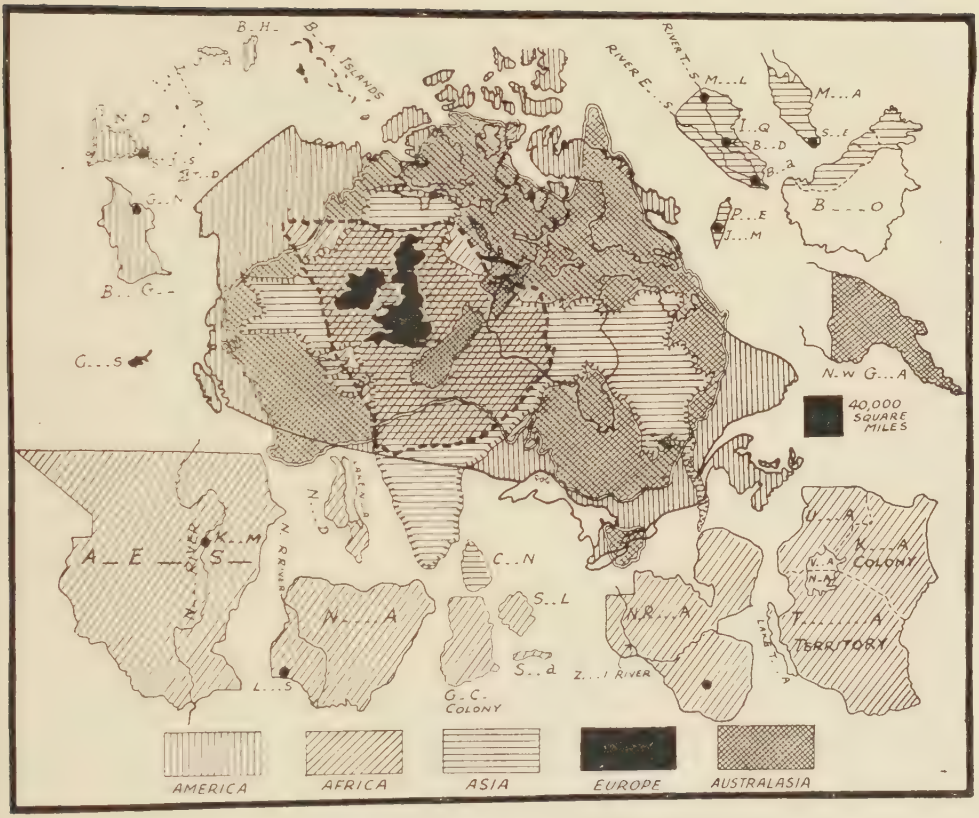


FIG. 178. PICTURE PUZZLE OF THE BRITISH EMPIRE

All the chief parts of the British Empire are shown, some of the more important parts are placed one on the other. All the parts from a continent are marked with the same lining and the continent represented by each marking is shown at the bottom of the picture. A black square on the right represents an area of 40,000 square miles. Find the Dominions of Canada and Australia. Which is the larger? Find India next (use Map **2** in Atlas to get the shape of the parts). How does it compare in size with Australia? Next find South Africa. By comparing it with the black square estimate the area. Find the British Isles. What is their area? Now search hard for New Zealand and compare it in size with the British Isles. All the others have the first and last letters of their names attached. By turning to the maps of the Continents and comparing the British possessions in each with the maps in the picture, find their names. Arrange them in the order of their size under each continent. In which continent has the British Empire the largest possessions? In which has it the least? What is the largest possession in Asia? In Africa? in North America? In South America? Some important rivers, lakes and cities are marked and the first and last letter of their names are given. Fill in the names of these places.

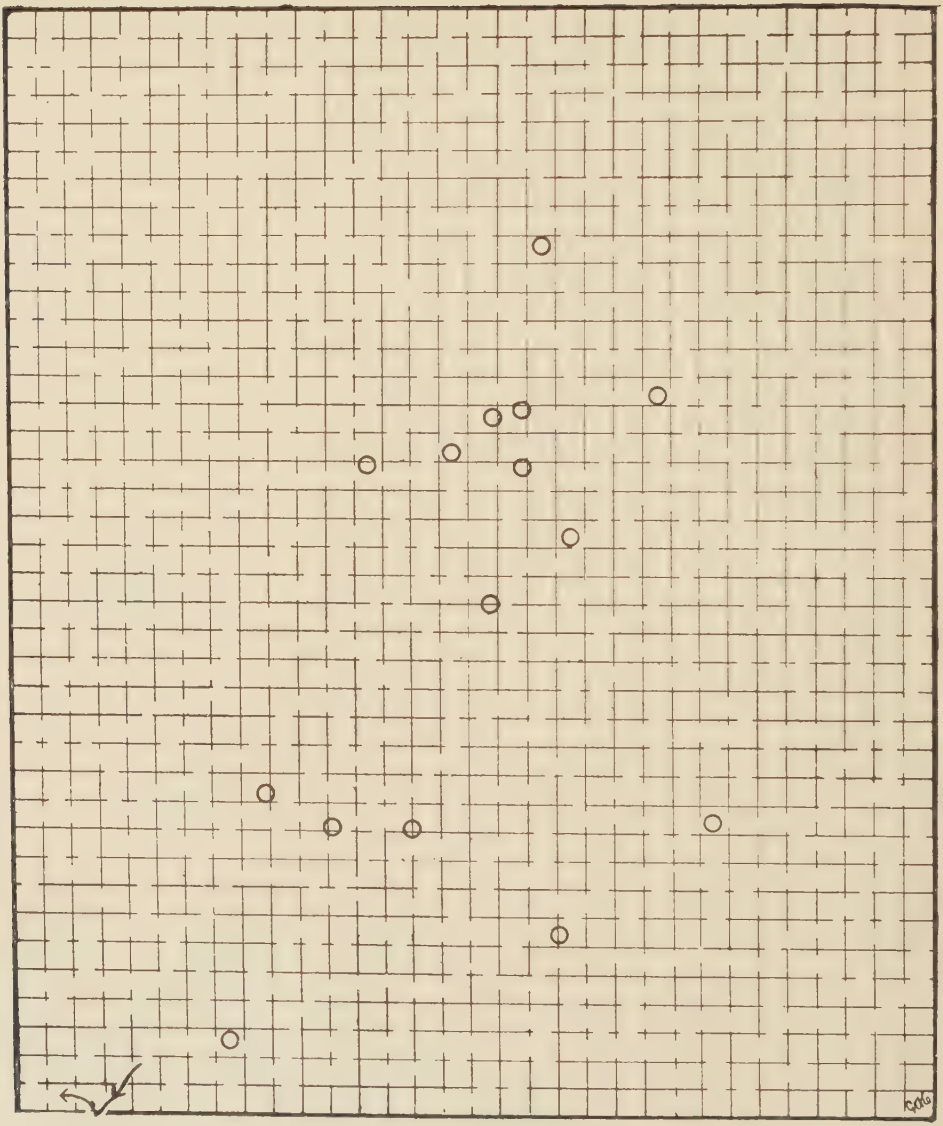


FIG. 179. A GREAT COUNTRY IN A MAZE

Start at the arrow near the bottom and pass through the gaps in the maze, marking your path with a lead pencil until you return to the starting-place. You will have the outline of a great country. Pass in the same way from its border inward through the gaps and you will mark out the chief rivers of the country. Find their names from the Atlas. The circles indicate the position of the chief cities. Write in the names of these cities. Each square in the maze covers an area of 100 square miles. Find the area of this country in the same way as you found the area of South America in Fig. 116.

of every ten ships seen on the ocean at least one hails from Liverpool. Fifty years ago it was one of the meanest, most wicked and filthy cities in Great Britain. But it has been transformed, and its wide, clean streets and dignified buildings are the pride of the citizens. To understand the great growth of this port we shall have to leave our boat and penetrate into the country. To the north and north-west is Lancashire, which contains the largest spinning and weaving mills on earth. It is no wonder that raw cotton is Liverpool's most valuable import. Farther east in Yorkshire are the world's premier woollen mills. East of Liverpool is the Sheffield region, where the finest cutlery as well as iron goods of all kinds are made. Many of the exports from this region pass over to the Liverpool docks. To the south are the Potteries, in which vast quantities of high-grade porcelain dishes are moulded and baked, and a large part of these are exported through Liverpool. Still farther south is the "Black Country," at the centre of which is Birmingham. Here iron machinery of all kinds, from watch-springs to locomotives, are made in hundreds of factories, and though much of this is exported through the River Humber and the Bristol Channel, some goes through the Mersey. All the smoking, clanging mills of these centres of the world's greatest manufactures are fed with raw products, such as cotton, tobacco, wool, rubber, iron ore; much of this comes in through the throat at Liverpool, and the finished products are distributed to every land through the same port.

Wales. We are now leaving the estuary of the River Mersey. Already the grim mountains of Wales look sullen in the distance. We never lose sight of them for a whole day, during which we pass the north, west, and south sides of this country of rugged mountains, flocks of sheep, and hardy Welshmen. As we pass up the Bristol Channel the emptiness disappears, and city after city comes into view. First Swansea and Cardiff on the north side, and Bristol on the south. All of them have coalfields near, and the first two manufacture metal goods of many kinds. Bristol, which has important trade with the West Indies, Canada, and the United States, is a large manufacturer of cocoa and chocolate.

Where sailors grew. Now we begin to skirt the most romantic part of the coast of England. It includes the counties of Devon and Cornwall. Little inlets shut from the stormy sea by stern, rocky capes that almost put their arms round them, have fishing villages hugging their shores. Such brave and rugged sailors as Sir Humphrey Gilbert,

Sir Francis Drake, and Sir Walter Raleigh had their first training for the sea from these little ports. As we round Land's End at the south-west we can see still farther west the Scilly Islands, which are like a handful of England thrown out into the Atlantic Ocean.

We sail rapidly along the south coast and see much farm land in the distance and many herds of sleek cattle. The naval cities of Plymouth and Portsmouth have their harbours well guarded by guns. Southampton, though hid behind the Isle of Wight, reveals its presence by the many steamers heading in its direction. At last after three weeks we return up the Thames to London.

I have now finished my trip round this snug little island, which has built up a great empire, and, better still, has given its sons and daughters to the great task of development and civilisation in many lands.

GEOGRAPHICAL PEPPER AND SALT

Two out of every three ears of corn grow in the corn belt of the United States.

The island of Cuba raises more sugar than any other nation, and British India is a close second.

Every second chestnut, almond, walnut, and hazel comes from the nut groves of Italy.

Mount Carleton (2630 feet) is the highest point in New Brunswick, and a point near Cape North on Cape Breton Island (1500 feet) is the highest point in Nova Scotia.

Baffin Island, nearly as large as Manitoba, is the largest Canadian island.

Germany leads the world in the production of sugar-beets.

The United States and Russia are striving keenly for first place in the rearing of horses.

It is rather surprising to know that India is the greatest producer of camels, and that Russia comes second.

Though the United States grows the most corn, Argentina exports the most.

Three out of every four balls of binder twine made from sisal hemp are the product of Mexican farms.

The Cubans are the greatest smokers, but the Dutch are a close second.

The railways of the United States are six times as long as those of Canada, but no other country surpasses us except Russia.

Duck Mountains (2600 feet) are the highest in Manitoba, and the Cypress Hills 4243 feet) are the highest in Saskatchewan.

Planned by P. H. Tacon, B.A.

FIG. 180. A PICTURE PUZZLE OF THE MANUFACTURES OF GREAT BRITAIN AND IRELAND

Each manufactured article is represented either by a picture of the product or a sign with the name on it. But the letters in the names have been put out of order. On, or near, each object is the initial letter, or letters, of the city in which it is made. The full names of the cities are given below. The pupil is to write out a list of the productions and put after each the name of the city, or cities, in which it is made.

B., Birmingham; Bo., Bolton; Be., Belfast; Br., Bristol; Co., Coventry; D., Dudley; Du., Dundee; Dub., Dublin; E., Edinburgh; Gl., Glasgow; Gr., Grimsby; H., Huddersfield; Ha., Halifax; K., Kirkcaldy; Ki., Kidderminster; L., Leeds; Le., Leicester; M., Middlesbrough; N., Newcastle; No., Norwich; O., Oldham; P., Paisley; Sh., Sheffield; Sw., Swansea; W., Warrington; Wa., Walsall; Wo., Worcester.

By courtesy of Government of Victoria, Australia.

FIG. 181. A GARDEN OF EDEN

This scene of luxuriant growth is near Melbourne. What is the prevailing vegetation?

CHAPTER XVIII

CALENDAR OF THE BRITISH EMPIRE

FIJI.

THE River Jordan in PALESTINE is overflowing its banks from rains which have been falling since October; the Zambezi River in RHODESIA is also very high and the Victoria Falls are at their best; the River Niger in NIGERIA is rising slowly, while rivers in the GOLD COAST are very low, the swamps dry, and vegetation withered.

GIBRALTAR and HONG KONG are having their coldest weather, but in the former the temperature drops only to 54° F., and in the latter to 40° F. In the MARITIME PROVINCES of Canada, however, the Strait of Northumberland is filled with ice, and navigation is only kept open by an ice-breaker.

GAMBIA, SOMALILAND, and the NICOBAR ISLANDS are having dry seasons. In Gambia the dry season began in December and has put an end to agriculture; in Somaliland it has compelled the dark-skinned shepherds to drive their flocks of cattle from the low, dry coast to the higher interior in order to get pasture; and in the Nicobar Islands it has given suitable weather for harvesting tobacco.

CYPRUS, on the other hand, is having its winter rains, and the land is being prepared and planted with vetch, lentils, chick-peas, aniseed, flax, and potatoes. The Island of MAURITIUS, during this and the succeeding four months, has severe cyclones accompanied by torrents of rain, and the STRAITS SETTLEMENTS are having the wettest month of the year.

STRAITS SETTLEMENTS.

Many Canadians and Americans are now avoiding the cold winter by sailing to enjoy the balmy air of BERMUDA ISLANDS. Here they are planting one crop of onions and potatoes and harvesting another to ship to Canada and the United States.

The negroes of NIGERIA, who are good farmers, are picking cotton, gathering and boiling palm nuts and then burying them in pits.

The cinnamon trees of CEYLON are making the air disagreeable with the smell of their greenish flowers; this month the natives finish picking cocoa pods.

INDIA is now in the midst of its cool season, the wheat fields are green, the poppy fields glow with beautiful flowers, sheep and cattle are grazing in the pastures, rice, sugar-cane and coffee are being gathered, and cotton-picking is just beginning.

In the BAHAMA ISLANDS the negroes are harvesting oranges, strawberries, potatoes, and cotton, and are making hemp from sisal in the factories, while in the FIJI ISLANDS, on the other side of the world, bananas are being both planted and picked, and yams are being dug.

Though SOUTH AFRICA is hot and wet the people are busy threshing wheat and picking strawberries, peaches, plums, grapes, pears and apples.

GIBRALTAR.

VICTORIA, SOUTH AUSTRALIA, and NEW ZEALAND are cutting wheat in the hot summer weather, while the wealthy from NEW SOUTH WALES and VICTORIA go to cool summer resorts in TASMANIA and NEW ZEALAND.

All CANADA, with the exception of Victoria and Vancouver in BRITISH COLUMBIA, is covered with snow, almost all rivers and lakes are ice-bound, in the north the trappers are busy outwitting the fur-bearing animals, in the forests of the east the trees are being felled and drawn to the frozen rivers. Smelt and eels are being caught through holes in the ice in the MARITIME PROVINCES. Halifax and St. John on the Atlantic coast, and all the harbours on the Pacific coast, are open, but Montreal and Quebec are ice-bound.

CANADA.

INDIA.

ZAMBEZI RIVER.

FEBRUARY

HONDURAS.

MANY tourists from GREAT BRITAIN, who have been visiting Egypt during the month, come up the Nile River to Khartum in ANGLO-EGYPTIAN SUDAN. Many CANADIAN and American tourists steam south to enjoy the warmth of JAMAICA and the BERMUDA ISLANDS. Many Americans also pay a visit to the BAHAMA ISLANDS.

One of the greatest contrasts in nature can be seen in PALESTINE; a person may stand near the shore of the Dead Sea blistering under a temperature of 120° F. and gaze on the glistening snow-cap on Mount Hermon only one hundred miles away.

The dry harmattan wind is blowing from the Sahara Desert over NIGERIA and covering everything with a coat of dust; the water in the Niger River continues to fall; the negroes are busy extracting palm oil from nuts.

The sportsmen of ENGLAND have finished shooting partridge and are beginning to hunt hares. This is the lambing season and many lambs are born. In the Lowlands of Scotland the grass is now green, and early potatoes are planted in the drier districts. Heavy rains fall throughout the British Isles.

This is one of the driest months in JAMAICA, the tobacco is being cut, and over six hundred pounds are often obtained from a single acre.

ENGLAND.

Sugar-cane is being cut in Southern INDIA, jute harvested in BENGAL, linseed and wheat are being gathered in the south, and young tea plants are being transplanted.

In the interior of NEWFOUNDLAND the loggers are cutting down spruce, tamarack, birch, and fir trees, and hauling logs over deep snow to the rivers. These same operations are being carried on in Eastern Canada.

While GREAT BRITAIN, CANADA, and NEWFOUNDLAND are having their coldest weather, HONG KONG is so warm that fires are no longer needed in the homes after this month; KENYA is having summer weather.

Workmen in BRITISH HONDURAS, who have been gathering chicle-gum, come out of the forest; other workers are beginning to cut mahogany and cedar, and still others are tapping the rubber trees.

Torrents of rain with thunder and lightning visit the FIJI ISLANDS this month. The natives are planting bananas and harvesting native products called wi and ivi; many men are fishing in the sea for turtles and bêche-de-mer.

The pasturage for cattle and sheep in SOUTH AFRICA is at its best, threshing continues, and peaches and other fruits are being shipped.

The negroes of NYASALAND are very busy planting cotton.

ENGLAND.

S. INDIA.

INDIA.

CANADA.

IRAQ.

THE British Empire has no great city on the equator where the sun now shines vertically, but Singapore in the STRAITS SETTLEMENTS and Nairobi in TANGANYIKA are less than one hundred miles from it.

As the snows are now melting in Armenia, the Euphrates and Tigris Rivers overflow their banks and flood parts of IRAQ (MESOPOTAMIA).

The rainy season begins in the NICOBAR ISLANDS and in the GOLD COAST, where it opens with tornadoes. MAURITIUS ISLAND also has terrible storms, which often do much damage. In PALESTINE and GIBRALTAR there have already been several rainy months, and the ground is gay with a robe of vivid green spotted with flowers of varied colours.

This is the hottest month in both the STRAITS SETTLEMENTS and ANDAMAN ISLANDS, and it is very dry in the latter.

The cool season is over in NIGERIA, hot, dry, dusty winds blow in from the desert, the rivers are very low, but traffic is brisk on the dry roads.

The farmers of SIERRA LEONE are clearing the land in preparation for seeding when the rains come. Ginger is now being exported.

CYPRUS is having trouble fighting her plague of locusts.

The highlands of CEYLON are now bright and fragrant with the flowers of the coffee plant, while the fishermen of the island are diving into the sea for pearls.

While in CYPRUS tobacco is being planted, it is being harvested in NYASALAND and INDIA.

S. GEORGIA.

Europeans are now leaving the hot plains of INDIA and retiring to Simla and Darjeeling in the Himalaya Mountains. The natives, however, are busy harvesting wheat in the PUNJAB, planting jute in BENGAL, cotton in the north-west, and picking tea in several places. The trees are shedding their leaves.

All is bustle among the NEWFOUNDLAND fishermen, as they are leaving in large sailing vessels to catch seals, brought south from the Arctic regions on the drift ice. They will be away for five weeks.

Cotton, sisal, and fruit-trees are being planted in the BAHAMA ISLANDS, while in the FIJI ISLANDS the main yam crop is harvested and stored in houses. Oranges are also gathered.

The herring fisheries in the North Sea begin in both ENGLAND and SCOTLAND; orchards are pruned, and barley, oats, and wheat are planted throughout the BRITISH ISLES. In Scotland the sheep are moved from the valleys, where they have been throughout the winter, to the hills.

Away in the Antarctic regions the whaling season is completed at SOUTH GEORGIA.

INDIA.

NEWFOUNDLAND.

SCOTLAND.

CEYLON.

APRIL

The warmth of spring in the **BRITISH ISLES** quickens the earth, and crocuses, snowdrops and primroses push through to show their pretty faces and to spread their sweet perfume over the land. Workmen are busy both on sea and land; thousands of fishing-boats sail from the eastern coast of Great Britain to catch herring, haddock, mackerel, and flatfish in the North Sea and adjoining waters; farmers are planting wheat, oats, and vegetables in **ENGLAND** and **SCOTLAND**, and flax and root crops in **NORTHERN IRELAND** and the **IRISH FREE STATE**. Great quantities of Irish eggs are now crossing the Irish Sea to feed the cities of England.

Canada.

During this autumn month in **RHODESIA** wheat is being sown, while in **IRAQ (MESOPOTAMIA)** it is being harvested. Much of this latter country is still flooded by the turbid waters of the Euphrates and Tigris Rivers as they rush to the Persian Gulf.

This month brings the rainy season to many parts of the British Empire. In **ZANZIBAR** on the east of Africa the south-west monsoon sets in and brings the heaviest rains of the year. **NIGERIA** and **SIERRA LEONE** on the west coast of the same continent have violent tornadoes and fearful thunderstorms to celebrate the beginning of the rainy season, and before the month is passed the negroes are busy planting rice, corn, peanuts, millet, onions, wheat, and cassava. **BRITISH GUIANA** in South America has its first month of rain, and **HONG KONG**, in Southern Asia, begins to feel the south-west monsoon, which shakes out its rain on the island; the land in the colony of **HONG KONG** is now being cleared in order to plant rice, corn, sugar-cane and vegetables. The island of **MAURITIUS**, on the other hand, welcomes the dry season, which lasts until December.

Ceylon.

Throughout **CANADA** and **NEWFOUNDLAND** the snow is rapidly melting, swollen streams rush down the logs and pulp-wood to the mills. The fishing fleet now leaves Newfoundland to spend the summer fishing for cod on the coast of **LABRADOR**. The southerly winds have scattered much of the ice in the Gulf of St. Lawrence, and navigation opens around **PRINCE EDWARD ISLAND**. Since December the Great Lakes and the St. Lawrence River have been sleeping like mighty giants, but the warmth of April destroys the icy bands, and navigation opens.

CYPRUS is harvesting wheat and barley, which are winter crops, and is planting cotton, corn, beans, and sesame.

Although the trees of **INDIA** shed their leaves last month, they are now a mass of bloom, and the natives are busy collecting the opium juice from poppies. The natives of **CEYLON** are kept busy, some peeling bark from cinnamon branches, others picking tea, still others placing coco-nuts in a moist place to sprout before being planted.

In **SOUTH AFRICA** winter rains are falling, ploughing and seeding are general, and grapes, late apples, pears, and peaches are ripening.

The scent of the orange blossoms in **PALESTINE** is delightful.

England.

Ceylon.

Labrador.

Hong Kong.

Sierra Leone.

The south-wes monsoon is now drenching SIERRA LEONE, GOLD COAST, and NIGERIA, seeding is continued, and the second crop of palm nuts is gathered. In GAMBIA, their near neighbour, every plant has crumbled to dust, but before the end of the month the rain is pouring down in this colony also. The island of SOCOTRA and BRITISH GUIANA also have heavy rains. In the former, cotton and tobacco are planted, and the flocks are brought down from the mountains to the moist coast. In the SEYCHELLES ISLANDS, where the south-east monsoon is felt, and in BRITISH GUIANA, the dry season begins.

The malarial mosquito appears in CYPRUS, and for the next three months there is much malaria and other fevers on the island.

This is a gay month in the BRITISH ISLES; trees are in leaf, seeds are coming up, fields and woods are bright with flowers, and cattle and sheep are feasting in the juicy meadows. Sheep-shearing begins.

British North Borneo.

Wheat and barley are being harvested in PALESTINE, pine-apples in the BAHAMA ISLANDS, rice in BRITISH NORTH BORNEO, and arrowroot is prepared by the brown natives of the FIJI ISLANDS.

The fishing industry is in full swing in the MARITIME PROVINCES, traps are set near the shores for lobsters, nets for mackerel, and lines and trawls for cod, haddock, and halibut.

CANADA is bright with spring flowers and trees in leaf. The planting of grain and vegetables is nearly completed.

The logs cut during the winter, throughout CANADA and NEWFOUNDLAND, are now made into rafts and taken to the mills, which from now onwards hum with industry, and great piles of lumber are cut.

Canada.

BRITISH SOMALILAND, though always warm, is now having its cool season, which is accompanied by heavy rains; as the coastal plain is clothed with green, sheep and cattle are brought down from the high interior.

Though this is the hottest month in CEYLON there is much work done; cinnamon bark is peeled from the tree-trunks, tea-leaves are picked, and the spring picking of cocoa begins. As the south-west monsoon now roughens the sea the pearl-fishers have to cease work.

Walnuts, chestnuts, pine-apples, bananas, and gooseberries are now ripe in SOUTH AFRICA, and oranges, lemons, guavas, and tangerines begin to open.

The natives of BRITISH NORTH BORNEO are busy picking cotton and splitting rattan.

Cotton is being planted in BURMA, jute-sowing is completed in BENGAL, tobacco is harvested throughout INDIA, and tea seedlings are transplanted before the rainy season begins.

Ceylon.

England.

England.

JUNE

This is a delightful month throughout the MARITIME PROVINCES, as the spring is well advanced, and the cold raw winds from the sea are replaced by cool refreshing breezes. The fruit trees are in blossom, and it is possible to drive for fifty miles in the Annapolis Valley through a bower of fragrant apple blossoms. The wheat throughout the PRAIRIE PROVINCES is sprouting and growing fast, and the farmers are nervously watching the weather. Many of the western farmers take their summer holidays at this time. The berries and cherries in BRITISH COLUMBIA are getting ripe, and Indians, Chinese, and whites are busy picking them. Buckwheat and turnips are planted in ONTARIO and QUEBEC. Navigation is open on the Mackenzie River right to its mouth, and Lake Athabaska is clear of ice.

S. Africa.

The dry fields of withered vegetation on the GOLD COAST have, by the heavy rains that began last month, been transformed into rank jungles of richest green. On the other hand the dry season has begun in GIBRALTAR, and vegetation is turning brown and withering.

The farmers of GAMBIA are feverishly stirring the soil, which is soaking wet with the heavy rains. They are planting peanuts, rice, millet, cotton, corn, tobacco, oranges, lemons, and mangoes. The Gambia River is now in flood and overflows its banks like the Nile.

Newfoundland.

The farmers of ENGLAND and IRELAND are cutting hay during this pleasant month. In England the sheep are being sheared, and the cows, now that the pastures are rich, give large quantities of milk. In Ireland early potatoes are dug and gooseberries picked.

All along the southern coast of NEWFOUNDLAND there is a bustle in the villages, for the fishermen are setting their nets along the shore to catch cod, and they continue fishing until November.

While CANADA and GREAT BRITAIN are enjoying the long days, TASMANIA and NEW ZEALAND have their shortest days and see the sun rise in the north-east, go across the northern sky, and set in the north-west.

The negroes of SOUTH AFRICA and NYASALAND are preparing the soil for tobacco and planting it. In the former the first oranges of the season are being picked, packed, and shipped to Britain.

Burma.

In both the WEST INDIES and UGANDA cotton is being planted.

At last the south-west monsoon bursts over INDIA and is accompanied by deluges of rain, which makes the soil soft for planting millet, cotton, and rice. The cutting of teak timber begins in BURMA and other parts of India.

Ireland.

Gambia.

England.

JULY

ENGLAND.

As one passes across Africa and Asia a little north of the equator the scenes are varied. In the west, SIERRA LEONE and NIGERIA are at the height of the rainy season, and the natives are busy hoeing their rapidly-growing crops. Though the ANGLO-EGYPTIAN SUDAN farther east is dry, the Nile River, which runs through it, is rapidly rising, thanks to the heavy rains in Abyssinia, where several of its tributaries rise. A little farther east BRITISH SOMALILAND is now withering up under the extreme heat and dryness of the south-west monsoon, so that the herds have to be taken back to the plateau. Just a little north of Somaliland, ADEN is receiving its only showers for the whole year. The south-west monsoon that makes Somaliland dry is soaking INDIA with the heaviest rains of the whole year, so that naked ground is changed to a mantle of vivid green.

CEYLON.

Hay-cutting begins throughout the MARITIME PROVINCES as well as in ONTARIO and QUEBEC. Navigation in Hudson Bay and its Strait opens. On a large part of the NEWFOUNDLAND coast lobsters are being caught and canned. Wooden ships that the Newfoundlanders have been making during the winter are now launched. The Strait of Belle Isle is at last free of ice, and trans-atlantic boats from Montreal take this shorter route to Europe.

The NIGERIANS are preparing land for cotton-planting and completing the harvest of palm oil and palm kernels. The Cingalese (natives of CEYLON) finish their cocoa harvest, while the Sudanese of the ANGLO-EGYPTIAN SUDAN are planting cotton, the natives of BRITISH NORTH BORNEO are tapping rubber trees, and the negroes of BRITISH HONDURAS are cutting sugar-cane.

HONDURAS.

The bogs of IRELAND are now alive with workers digging and drying turf and preparing it for market. The heather is coming out in flower and the heaths of SCOTLAND begin to glow with colour. As the herring in the North Sea are migrating south, this fishery is over in Aberdeen.

Although this is the coldest month in SOUTH AFRICA, and on the high-lands ice may form at night, along the coast, oranges, lemons, and tangerines are still being picked.

Although most parts of AUSTRALIA never see snow, yet during July much falls on the higher peaks of the Australian Alps, and many pleasure-seekers from Sydney and Melbourne ascend Mount Kosciusko to enjoy winter sports such as sleigh-riding, tobogganing, skiing, and skating.

BRITISH NORTH BORNEO.

IRELAND.

AUSTRALIA.

AUGUST

This is the hottest month in the BERMUDA ISLANDS, CYPRUS, GIBRALTAR, HONG KONG, and many other parts of the British Empire north of the equator. It is the coldest month in the GOLD COAST. IRAQ (MESOPOTAMIA) is burning up, all vegetation is withered, and the Euphrates and Tigris Rivers are very low; the Niger River in NIGERIA, on the other hand, is very high, and the rivers of the GOLD COAST are so full of water that great canoes with heavy cargoes navigate its streams.

The dry season begins in ZANZIBAR and continues until October.

Coco-nuts are ready to pick in the NICOBAR ISLANDS and are being planted in CEYLON.

Wheat and oats are being harvested in ENGLAND and SCOTLAND, and raspberries, gooseberries, and currants are being picked. The oyster fisheries begin in the south of ENGLAND, and there is considerable interest among English sportsmen as the season for shooting grouse opens.

The locust, a tree of CYPRUS, is in the strange condition of having this year's flowers and last year's pods on it at the same time; the latter are gathered this month.

Yams are planted, coco-nuts are ripe, and cotton is picked in the FIJI ISLANDS; in MAURITIUS ISLAND the natives begin cutting sugar-cane, the main product of the island, and the harvest is not completed until December.

In parts of SOUTH AFRICA the peach and almond blossoms delight the eye and perfume the air.

Throughout NEW SOUTH WALES the sheep are being driven into pens and sheared with electrical clippers.

The sirocco, a hot dust-laden wind from the Sahara Desert, blows strongly over MALTA, withering the vegetation, and covering everything with an ashy film.

In INDIA the rice seedlings are being transplanted from the seed-beds to the fields.

The collection of chicle, the chief component of chewing-gum, is beginning in the forests of BRITISH HONDURAS, while the tapping of the rubber tree is completed.

All over CANADA harvest operations are at their height. Tens of thousands of labourers go from Eastern Canada and ENGLAND to assist in harvesting the four hundred millions of bushels of wheat, and still larger quantities of oats throughout the PRAIRIE PROVINCES. The harvesting of wheat, oats, and barley is being carried on in Eastern Canada also. In the MARITIME PROVINCES blueberries and raspberries are being picked and early apples are put on the market.

New South Wales.

Malta.

England.

England.

England.

England.

SEPTEMBER

CEYLON.

TERRIBLE typhoons are likely to sweep over **HONG KONG,** and similar storms called hurricanes visit **JAMAICA,** injuring crops and homes.

The farmers of **IRELAND** are now harvesting tobacco, while the negroes of **SOUTH AFRICA** are transplanting the seedlings of the same plant.

In the **BERMUDA ISLANDS** they have already begun to plant potatoes and onions for an early crop.

It rains every day in the **ANDAMAN ISLANDS,** and the rainy season now begins in **BRITISH HONDURAS.** In the latter colony mahogany logs are brought out of the forest, cacao trees are planted, and sugar-cane is set out.

SUDAN.

After continuous drought since May, **PALESTINE** looks grey, dusty, and parched. The people, however, are busy harvesting millet and sesame, and picking figs, grapes, olives, melons, oranges, and pomegranates. In **CYPRUS,** near by, some fields are being sown with flax and broad-beans, while in others cotton is being picked.

After the winter, vegetation now springs to life in **RHODESIA,** the trees come out in leaf, sap flows, meadows become green, and beautiful flowers bring brightness to the land.

The Nile River is now at its highest throughout Egypt and the **ANGLO-EGYPTIAN SUDAN;** the great dam at Assouan is opened to let the surplus water through.

ENGLAND.

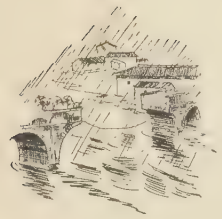
The most unhealthy season of the year is beginning in **INDIA,** but the native Indians work on harvesting rice and indigo and pulling jute. The rubber trees that are so numerous in **CEYLON** are being regularly tapped, and this process continues until the end of the year.

In **NEW ZEALAND** the planting of cereals is completed, and the people are very busy making cheese and butter and freezing and shipping meat.

Many sportsmen from the United States and **ENGLAND** penetrate the interior of **NEWFOUNDLAND** to hunt for deer and other game. Many of the hunters remain until Christmas.

The **ENGLISH** and **IRISH** are now picking apples, plums, and peaches; partridge-shooting, which begins this month, is not forgotten by the sportsmen of Great Britain.

In every township throughout **CANADA** several threshing machines are hard at work. The elevators in the **PRAIRIE PROVINCES** are filling with wheat and oats, and thousands of carloads are being rushed to Port Arthur, Fort William, and Vancouver, where the grain is loaded into steamers to be carried to Europe.



HONDURAS.

HONDURAS.

INDIA.

OCTOBER

BRITISH SOMALILAND is blessed with a second rainy season, which continues until the end of the year, But SOCOTRA ISLAND, a little to the east of it, has now entered its dry season, and the natives are busy picking cotton and harvesting tobacco.

TRINIDAD.

The most diverse crops are being harvested or planted in different parts of the British Empire. The negroes of GAMBIA are digging peanuts and cutting rice and corn. The dark-skinned natives of ZANZIBAR begin picking cloves, which are the unopened buds of a tree. In the island of CEYLON coffee berries and tea-leaves are being gathered. Cotton is being picked in INDIA, and as rice and other crops are harvested, wheat and flax are planted in their stead. In the STRAITS SETTLEMENTS rice, the chief crop, is planted. Bread-fruits are being picked in the FIJI ISLANDS. The chief cocoa crop is being picked in TRINIDAD. The natives of the NICOBAR ISLANDS are cutting sugar-cane.

CEYLON.

This month sees the end of the drought in several parts of the British Empire. The first rains cover PALESTINE with a bright green, which forms a great contrast to its appearance during the preceding month. At the beginning of this month, the hottest in the year, RHODESIA is parched and withered, but the rains soon revive it. As the drought in GIBRALTAR ends, annual plants come through the ground, trees unpack their buds and become a mass of green.

On the other hand some regions in the Empire are just beginning to feel the effects of the dry season. The NIGERIANS now see their rivers very low and are busy harvesting wheat. The BAHAMA ISLANDS also have a respite from rain and are engaged in picking fruit and planting pine-apples.

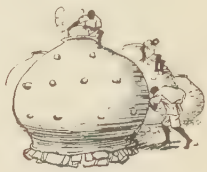
The farmers of GREAT BRITAIN are busy during this stormy month with fall ploughing, planting winter wheat, and digging root crops, while sportsmen have turned to pheasant-shooting.

GIBRALTAR.

Throughout CANADA the forests are a panorama of glorious colours as the leaves of the deciduous trees take on their autumn tints; nowhere in the world is such a blaze of colour seen, but by the end of the month the leaves are gone. Threshing continues, and the boats on the Great Lakes are very active in shipping the western wheat. The main apple crops are being picked, packed, and shipped. This month sees the end of the peaches, grapes, and tomatoes, which have now been on the markets of ONTARIO and QUEBEC for two months. Navigation through Hudson Strait closes toward the end of the month, and the Mackenzie River and Athabaska Lake are frozen over.

INDIA.

SOCOTRA.



NIGERIA.

NOVEMBER

KENYA.

THOUGH the mining of iron ore in **NEWFOUNDLAND** continues throughout the year, it receives a special stimulus at this period, as the fishermen's season is over, and many enter the mines for the winter.

Rains fall on the east coast of **SOUTH AFRICA,** cereals and peas are harvested, figs, early apples, and strawberries are ripe, and corn and cotton are sown.

Wheat and corn are being cut in **QUEENSLAND,** but in **SOUTH AUSTRALIA** the wheat is just heading out, and the hay harvest is in full swing.

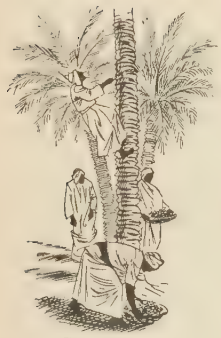
ENGLAND.

The planters are picking the apple crop in **KENYA.**

This is the only month in the year when the **FALKLAND ISLANDS** do not have heavy rain. The rainy season begins in **NYASALAND,** and tobacco seedlings are transferred from the seed-beds to the fields. **JAMAICA** is also planting out tobacco—thirteen thousand plants to the acre.

Dates are being picked in **SOCOTRA,** and flocks are driven from the parched plain to better pastures in the highlands.

As the south-west monsoon is fading away, **SIERRA LEONE** is entering her dry season, and tornadoes from the east begin. Tornadoes are also playing havoc in the **ANDAMAN ISLANDS.**



SOCOTRA.

Tea-picking in **CEYLON** is completed, but coffee-picking continues, cocoa beans are collected, and cinnamon bark is peeled from the trees. Tea-picking is finished in **INDIA** during this month, but the Indians continue picking cotton and begin to plant poppy seed.

The salmon and herring fisheries close in **SCOTLAND.** In both **GREAT BRITAIN** and **IRELAND** ploughing is general, and wheat is sown. The hunting season opens in **IRELAND,** and sportsmen in **ENGLAND** turn to fox-hunting. In this country many store cattle are slaughtered for beef.

Ploughing is completed in Canada, snow falls in many places, the St. Lawrence is blocked with ice so that the port of Montreal is closed, and Canadian traffic passes more largely to St. John and Halifax. The grain traffic on the Great Lakes continues at high pressure. Great Slave Lake is frozen over.

CEYLON.

CANADA.

ENGLAND.

DECEMBER

Though this is the coldest month in the ANDAMAN ISLANDS, the average temperature is 79° F. In the island of CYPRUS the inhabitants are having the coldest weather also, the temperature dropping to 30° F.

Bahama Islands.

The harmattan, or north-east trade-wind, is still blowing from the Sahara Desert over NIGERIA, SIERRA LEONE, and the GOLD COAST and brings heat, dryness, and dust, but the nights are cool. There is much traffic along the dry roads. Cotton is being picked in NIGERIA, and the cattle of the GOLD COAST are driven to the coast to be sold.

The harvesting of early onions and potatoes begins in the BERMUDA ISLANDS, while in the adjoining BAHAMA ISLANDS the people are busy picking cotton, cutting sisal, and picking, packing, and shipping oranges.

SOUTH AFRICA has begun her summer, tobacco being gathered, and such fruits as apricots, plums, peaches, and strawberries are being picked.

Honduras.

The wet season is beginning in the SAMOA ISLANDS.

The north-west monsoon begins to blow over the SEYCHELLES ISLANDS and continues until March.

Throughout WESTERN and SOUTHERN AUSTRALIA, VICTORIA, and NEW SOUTH WALES, the harvesting of many thousand acres begins. Wheat is also being cut in BURMA.

As the summer is approaching in the FALKLAND ISLANDS the ground is covered with a great variety of sweet-scented flowers.

This is the beginning of the picking season for cocoa-beans in BRITISH HONDURAS.

Samoa.

ENGLAND and SCOTLAND have unsettled weather, grouse-shooting ends, and large numbers of beef cattle and poultry are being imported from IRELAND.

The rivers and all lakes except the Great Lakes in EASTERN CANADA are frozen over, but the Great Lakes never freeze. Navigation on the Great Lakes, however, closes this month, as the connecting rivers are blocked with ice. Great Bear Lake, the last of the great northern lakes to withstand the cold, is now frozen over. The harbour of Charlottetown in PRINCE EDWARD ISLAND is also covered with a layer of ice. Sleighing, skating, snow-shoeing, and skiing become general throughout Northern and Eastern Canada. Lumber camps are opened.

England.

Canada.

S. Africa.

EXERCISES

1. On the first day of each month study carefully the calendar for that month. Find in the Atlas the position of the places named, and picture to yourself the varied occupations, products, and climates of the different parts of the British Empire.

2. Write in a note-book the following list of products : wheat, barley, corn, millet, tobacco, sugar-cane, coffee, rubber, cocoa, rice, cotton, oranges, apples, peaches, pine-apples. After each product put the different months in which it is harvested in some part of the British Empire; also put the names of the regions in which it is harvested each month.

3. Write a list of all the regions that have monsoons, find their positions on Maps 3 and 4 in the Atlas, and state in what parts the monsoons are most pronounced.

4. Write a list of the regions in the British Empire that have a rainy and a dry season, and after as many as possible write the length of each season. In which of these regions are there monsoons? Which lie within the tropics?

5. The following strange products are mentioned in the calendar : vetch, lentils, chick-peas, aniseed, palm nuts, sisal, palm oil, jute, wi, ivi, bêche-de-mer, yams, millet, cassava, sesame, arrowroot, guava, tangerine, rattan, mango, teak, palm kernel, chicle, mahogany, pomegranate, broad-bean. Consult a dictionary, or better, an encyclopædia, to find a description of each of the above products; write after each its description, use, and the regions from which it is obtained.

INDEX

All numbers refer to pages; numbers in heavy type refer to pages on which are pictures illustrating the topic.

Aberdeen, 136, 292
Abyssinia, 229, 292
Acacia, 209, 246, 262
Aconcagua, 221
Adelaide, **275**
Aden, 292
Aeroplane, **197, 198**
Africa, 192, 222; and Canada, **228**; coast, 222, 241; surface, 222
Agassiz, Lake, 21
Agricultural implements, 96
Alabama, 160
Alaska, 156
Alberta, 55, 91, **122**
Albert Nyanza, 226
Alexandria, 222, 233
Alfalfa, 151
Algeria, 233
Algonquin, Lake, 21
Alligator, 175
Allspice, 261
Almond, 205, 282, 293
Alps Mountains, 75, 183, 188, 191
Amazon River, 164, **174**
Amsterdam, 221
Amur River, 210
Andaman Islands, 288, 294, 296, 297
Andes Mountains, 164, 167, **170**, 171
Anglo-Egyptian Sudan, 287, 292, 294
Animal life in India, 266
Animals of jungle, 266
Aniseed, 286
Annapolis Valley, 291
Antofagasta, 67
Antwerp, 188, 199, 221
Appalachian Plateau, 143
Apple, 75, 155, 156, 205, 245, 286, 289, 291, 293, 294, 295, 296, 298
Apple orchard, **66**
Apricot, 297
Arab, 234; beggar, **215**; woman, **215**
Arabia, 210
Arabian Desert, 206
Aral Sea, 214
Arctic Ocean, 210
Ardennes Mountains, 191
Area of a continent, **181**
Argentina, 42, 163, 168, 172, **177, 178**
Arizona, 160
Armenia, 213, 288
Armenian Knot, 205
Arrowroot, 290
Arsenic in Canada, 52
Artesian well, 249
Artificial silk, 119
Asbestos in Canada, 52
Asia, Chap. XV., 192; cities, 214; climate, 217; deltas, 210; plains, 209; prairies, 210; rivers, 209; transportation, **211**, 213
Asia Minor, 205
Askal Chin Lake, 107
Asparagus, 156
Asphalt, 76
Ass, 205
Assiniboine River, 104
Assuam,229; dam,229,230,294
Astoria, **150**
Athabaska Lake, 291, 295
Athabaska Pass, **74**
Atlas Mountains, 222, 237
Australia, 30, 38, 42, 55, 192, 245–249, 270, 292; surface, 245
Australian Alps, 292
Australian Desert, 246
Australian wool, **275**
Automobile, 96, 103
Autumn tints, 295
Bab el Mandeb, **204**
Babine Lake, 22
Bacon, 96, 148, 196
Baffin Island, 282
Bagdad, **272**
Bahama Islands, 286, 297, 288, 290, 295, 297
Baikal Lake, 107
Balkan Mountains, 183, 188
Balloon, **197, 198**
Balsam fir, 287
Baltimore, 139, 140
Banana, 92, 176, 245, 250, **260**, 261, 286, 287, 290
Banff, 75
Bank, 124
Bangkok, **220**
Banks of Newfoundland, 127
Barcelona, 200
Barley, 202, 213, 230, 233 237, 288, 289, 290, 293
Barn-door skate, 128
Barren Lands, 1
Basle, 194
Basra, 76, **215**
Bassano Dam, 91
Bay of Fundy, 107, 124
Beans, 202, 289
Bear, 152
Bêche-de-mer, 287
Beaver, **3**
Beef, 148, 175, 176
Bees, 64
Beira, 222
Belfast, 199, 221, 278, **283**
Belgian Congo, 92
Belgium, 195, 199
Belgrade, 196
Belle Isle Strait, 292
Belleville, **101**
Benares, 76
Bengal, 287, 288, 290
Berbers, 234
Bergen, 136

Berlin, 200
Bermuda Islands, 286, 287, 293, 294, 297
Berry, 156
Big horn, 60
Binder twine, 282
Birch, 287
Birmingham, 281, **283**
Black bear, **65**
Black Country, 281
Black Forest Mountains, 191
Black Sea, 183
Blast-furnace, 274
Blasting, 47
Blueberries, 293
Blue fox, **3**
Blue Mountains, 139
Boer, 253
Bog, 292
Bogota, **170,** 175
Bolivia, 163, 164, **166,** 168
Bolton, **283**
Bombay, 269
Bonito, **126**
Book-making, 200
Bosporus, Strait of, **204**
Boston, 136
Boulder, **16**
Boulogne, 136
Bow River, 91
Bradford, 273, 274
Brandon, 92, **102**
Brantford, **101**
Brazil, 30, 42, **129,** 131, 163, **164,** 167, 270
Brazil nuts, 176
Bread-fruit, 250, 295
Bridges over Fraser River, **69**
Bristol, 281, **283**
Bristol Channel, 281
British Columbia, **122,** 55, 156, 201, 291; climate, 37; coast, 33; forests, 34
British Guiana, 163, 171, 289, 294
British Honduras, 287, 292, 293, 294, 297
British Isles, 289
British Malaya, 92
British North Borneo, 290, 292
British people, 188
British Somaliland, 292, 295
Broad-bean, 294
Buckwheat, 291
Buddhist shrine, **220**
Buenos Aires, 42, 76, 172
Buffalo, N.Y., 96, 144, **145,** 147, 221
Bulgarian women, **194**
Bullock cart, **271**
Burma, 76, 270, 290, 291, 297
Burnt forests, **114**
Butter, 42, 96, 148, 196, 258, 294

Cacao, 167, 176, 294; tree, 42
Cactus, 159
Cairo, 230
Calcutta, 67, 214, 269
Calgary, **73,** 75, 91, 99, **102,** 107
California, 30, 41, 156
Camel, **197, 198,** 205, 233, 234, 266, 282
Canada, 192, 195, 282, 289, 290, 293, 294, 295; cheese, 76; codfish, 128
Canadian National Railways, 42, 72, 100
Canadian Pacific Railway, 72
Canadian Shield, 51, 104
Cannery, 29, **150**
Canning salmon, 30
Canoe, 2, **197, 198**
Canoe River, 59
Canso, 131, 136
Canton, 67
Cape Horn, 163
Cape North, 282
Capetown, 222, 254
Capitol, Washington, 139
Caravan, 209, 234
Cardiff, 281
Canberra, 245
Cardboard, 191
Caribbean Sea, 261
Cariboo Mountains, 51
Cariboo gold-fields, 63
Carleton, Mount, 282
Carolina, 160
Carpathian Mountains, 183, 191
Carpet, 103
Carpet-making, **190**
Cascade Mountains, 155
Caspian Sea, 183, 220
Cataract, 229
Cattle, 42, 148, 151, **165, 166,** 167, 168, 171, 201, 253, 262, 266, 274, 277, 282, 287, 290, 296, 297
Cattle ranch, 151, 160
Cassava, **232,** 289
Caucasus Mountains, 183, 188
Cedar, **114,** 287
Central Asia, 221
Cevennes Mountains, 191
Ceylon, 55, 270, 286, 288, 289, 290, 292, 293, 295, 296
Chad Lake, 107, 225
Charlottetown, 104, 297
Chatham, Ont., **101**
Cheese, 96, 148, 294
Cherra Punji, 107
Cherries, 205, 291
Chesapeake Bay, 140
Chestnut, 282, 290
Cheviot Hills, 274
Chewing-gum, 293
Chicago, 96, 147, 148
Chick-peas, 286
Chicle, 287, 293
Chile, 163, 164
China, 38, 42, 67, 120, 156, 202, 214, 217
Chinchilla, **3**
Chinese, 249; coolie, 250; gardens, 250
Chocolate, 42, 176, 281
Church, **193**
Churchill River, 195
Chum salmon, 25
Chute, 38
Cinchona, 67
Cinnamon, 55, 286, 289, 290, 296
Cleveland, 96, 144
Cloves, 92, **243,** 295
Clyde River, 228
Coal, 144, 156, 191, 195, 199, 249, 265, 274, 277
Coalfields, 281
Coal in Canada, 55
Coal mines, 48
Coast Mountains, 37, 51, 64, 156
Cobalt, 52
Cocoa, 42, **165, 166,** 176, 261, 262, 281, 286, 290, 292, 295, 296, 297
Coco-nut, 250, 261, **267,** 289, 293
Cod, 124, **126,** 128, **129,** 131, 188, 290
Cod-fishing, 289, 291
Codfish drying, **137**
Coffee, 42, **165, 166,** 167, 175, 176, 238, 257, 261, 270, 286, 288, 295, 296
Coho salmon, 25, **27**
Cola-nut, 262
Collars, 143
Colombia, 42, 76, 163, **166,** 167, 168
Colonist sleeper, 84
Colorado River, **149,** 159, 160

Columbia River, 59, 155, **157,** 195
Congo River, 225
Constantinople, 201
Copenhagen, 196
Copper, 152, **165, 166**
Copper in Canada, 52
Copra, 250
Coral, **126**
Cordova, 176
Cork, 123
Corn, 144, 147, **166,** 168, 171, 230, 233, 257, 282, 289, 291, 295, 296
Corn belt, 147
Cornwall, 281
Cotton, 92, 96, 160, **166,** 167, 191, 209, 213, 218, 230, 233, 238, 245, 257, 262, 273, 281, 286, 287, 288, 289, 290, 291, 292, 294, 295, 296, 297
Cotton field, 233
Cotton tree, 241
Coventry, **283**
Cowboy, 151
Creamery, 151, 258
Crocodile, 226, 241
Crosscut, 47
Cross-word puzzle, **138**
Crowsnest Pass, 55, **74**
Crusher, 48
Cuba, **129,** 282
Cumberland, 278
Currant, 64, 293
Cut-glass, 191
Cutlery, 281
Cyclone, 286
Cypress Hills, 282
Cyprus, 286, 288, 289, 290, 293, 294, 297
Czecho-Slovakia, 123, 195, 199

Dairying, 258
Dairy produce, 148
Dakota, 148, 151
Danube River, 188, 196
Dardanelles, **204**
Darjeeling, 288
Darling River, 249
Dates, 76, 187, 209, **216,** 230, 233, 237, 238, 296
Dauphin, **102**
Dawson, 52
Dead Sea, 225, 287
Deccan, 206
Deep-sea fishermen, 124
Deer, 294
Delaware Bay, 140
Delta of Mississippi, 160
Delta of Nile, 233
Denmark, 183, 196, 258
Detroit, 96, 147, 221
Devon, 281
Diamond, **165,** 221, 254
Diamond drill, 44
Distillery, 277
Dividing Range, 245
Docks, **212**
Dogfish, 128
Dogsleigh, **197, 198**
Dog-train, 2
Doldrums, 135
Donkey, 266
Dory, 127
Douglas fir, 34, **39,** 41, 59
Douro River, 199
Dover Strait, **204,** 270
Dredge, 124
Drifter, 273
Drilling (mining), 44
Drumheller, 55, **102**
Drying codfish, **137**
Dublin, **283**
Duck, 88, 201
Duck Mountains, 282
Dudley, **283**
Duluth, **146,** 147
Dundalk, Ont., 123
Dundee, 221, 277, **283**
Dutch East Indies, 67, 123
Dutch Guiana, 163
Dutch people, 188

East Indies, 218
Easter lilies, **259**
Ebony, 261
Ecuador, 163, **165,** 168
Edinburgh, 277, **283**
Edith Cavell, Mount, 75
Edmonton, 55, **73,** 75, 99, 100, **102,** 107
Eel, 286
Egg, 42, 148, 289
Egypt, 38, 96, 230, 287, 294
Elbe River, 192, 200
Elbruz, Mount, 221
Electrical power, 96, 103, 143, 191
Elephant, **197, 198, 219**
Elephant's tusk, 230, 233
Elevator, 88, **89,** 100, 144, 294
Emerald, 76, **166,** 167
England, 96, 120, 180, 195, 199, 287, 289, 291, 293, 294, 297
Erie, 144
Erie Canal, 143, 144
Ermine, **3,** 5
Esker, **24**
Eskimo, **4, 7**
Estuary, 273
Euphrates River, 213, 288, 289, 293
Europe, Chap. XIV.; climate, 183; coast, 180, 188; fisheries, 188; forests, 187; harbours, 183; lumbering, 188; manufacturing, 195; minerals, 191; mountain gaps, 188; people, 192; rainfall, 183, 187; rivers, 192; surface, 183
Everest, Mount, 42, 205, 221
Extracting gold, 48

Factories of Canada, 195
Falkland Islands, 296, 297
Famine, 269
Farming in Canada, 195
Farming in Nigeria, 262
Feathers, 67
Fernie, 55
Fibre silk, 119
Fig, 156, 294, 296
Fiji Islands, 286, 287, 288, 290, 293, 295
Film-making, **158**
Findlay River, 59
Finland, 120
Fire prevention, 115
Fire-ranger, 115
Fire tower, 115, **117**
Firth of Forth, 67, 277
Fisher, **3**
Fisheries, **126**
Fishermen, 124
Fishing, **134**
Fishing fleet, **133**
Fishing gear, 127
Fishing in England, 273, 289
Fishing in Maritime Provinces, 290
Fishing schooner, 127, **133**
Flatfish, 289
Flax, 30, 168, 286, 289, 294, 295
Florence, 196
Florida, 160
Flume, 138, 56
Ford factory, 147
Forest, 112, **113,** 120
Forest fire, 41, seq. 108, **110**
Forest protection, 41
Forests of the world, 120
Forestry, 120

Fort Smith, **11**
Fort William, 92, 99, 294
Forth Bridge, 67
Fox-hunting, 296
France, 38, 120, 123, 183, 187, 192, 195
Fraser Delta, 64
Fraser River, Chap. VI., **28, 69**
French Guiana, 163
French people, 188
Fruit market, Zanzibar, **232**
Fuji, Mount, **208**
Fur, **3**
Fur seal, **3**

Galt, **101**
Gambia, 261, 262, 286, 290, 291, 295
Gambia River, 261, 291
Ganges River, 205, 210, 213
Gasoline, 55
Gebirge Mountains, 191
Geese, 201
Genoa, 188
Georgia, 160
German people, 188
Germany, 42, 96, 120, 123, 180, 183, 187, 195, 282
Geyser, 152, **162,** 258
Gibraltar, 286, 288, 291, 293, 295
Gibraltar, Strait, **204**
Gill-net, 26, **28**
Ginger, 261, 288
Glacial period, 17
Glacial scratches, 17
Glacier, 205
Glasgow, 201, 278, **283**
Glass, 196, 277
Gloucester, 136
Gloves, 143
Gloverville, 143
Goat, 123, 201, 205, 233, 238, 253
Goderich, 100
Gold, 42, 152, 156, **165, 166,** 167, 195, 249, 265
Gold in California, 159
Gold in Canada, 51, 52
Gold Coast, 42, 261, 262, 286, 288, 299, 291, 293, 297
Gold mine, 159, **256**
Gold-mining, Chap. V., 242
Gooseberry, 64, 290, 291, 293
Grand Bank, 124
Grand Canal, 67
Grand Canyon of Colorado River, **149,** 159, 160
Grain, 196
Grapes, **178,** 233, 245, 249, 257, 286, 289, 294
Grape-fruit, 160, 261
Great American Desert, 159
Great Bear Lake, 297
Great Britain, 38, 42, 183, 187, 192, 270–282, 287, 291, 295
Great Central Plain, 160
Great Lakes, 289, 295, 297
Greece, 30, **129,** 187
Greenland, 183, 221
Grimsby, 136, 273, **283**
Grizzly bear, 60
Ground-nuts, 262
Grouse-shooting, 293, 297
Guava, 290
Guelph, **101**
Gulf of St. Lawrence, 289
Gulf Stream, 132
Gum, 230, 233, 238
Gum arabic, 234
Guinea Coast, 265

Haddock, 124, **126,** 131, 188, 289, 290
Hair seal, **3**
Hake, 124, 131
Halibut, 75, 107, 124, **126,** 156, 290
Halifax (N.S.),99,136,286,296
Halifax (England), **283**
Hamburg, 188, 200
Hamilton, **98, 101,** 104, 107
Hammerfest, 67
Hamster, **3**
Hankow, 67, 214
Hare, **3**
Hare-shooting, 287
Harmattan, 287, 297
Hartz Mountains, 191
Hatch on boat, 147
Hausa, 238
Havana, 67
Hawaii, 156
Hay, 201, 291, 292, 296
Hazel, 282
Heather, 292
Hell Gate, 64
Hen, 201
Hermon, Mount, 287
Herring, 124, **126,** 188, 289, 292, 296
Herring fisheries, 288
Hides, 175
Highlands of Scotland, 277
Himalaya Mountains, 205, 210, 288
Hippopotamus, 226, **263**
Holland, 76, 183, 192, 258
Holyrood Castle, 277
Honduras, 92
Hong Kong, 67, 286, 287, 289, 293, 294
Hope, B.C., 64
Hops, 64, 273
Horse, 201, 205, 282
Horse latitudes, 132
Hot springs, 258
Huddersfield, **283**
Hudson Bay, 1, 10, 292
Hudson Bay Railway, 103
Hudson River, 143
Hudson Strait, 292, 295
Hudson Valley, 143
Hudson's Bay Company, 1
Hudson's Bay Company post, 2, 9
Hull, 136, 273
Humber River, 273
Humpback salmon, 25, **27**
Hunting, **125**
Hurricane, 294
Hut in Zanzibar, **255**
Hwang-ho, 210, 213
Hydro-electric power, **154**

Ice cap, Chap. II.
Iceland, 273
Illinois, 148
Immigrants, **85, 86**
Immigrants arriving, **82**
Immigrants' homes, **94**
Immigration to Canada, **81**
India, 42, 96, 202, 217, 230, 265–270, 282, 287, 288, 289, 290, 291, 292, 293, 294, 295
Indian, 2, **12**
Indian people, 265
Indian village, 269
Indians of Brazil, **174**
Indiana, 147, 148
Indigo, 213, 294
Indo-China, 210, 217
Indus River, 210, 213
Innsbruck, 188
Inshore fisheries, 124
Interior Plateau, B.C., 37, 63
Iowa, 147
Iran, 210
Iran Plateau, 205
Iraq, 288, 289, 293
Ireland, 258, 289, 290, 291 294, 296, 297
Iron, 144, 191
Iron machinery, 281
Iron ore, 123, 281, 296

Iron ore dock, **146**
Iron smelting, 274
Irrawaddy River, 210
Irrigation, 187
Irrigation in India, **272**
Isle of Man, 278
Isle of Wight, 282
Italy, 42, 120, **129,** 180, 191, 282
Ivi, 287

Jam, 277
Jamaica, 92, **129,** 261, 287, 294, 296
Japan, 38, 42, 67, 123, 156, 217, 218
Japanese children, **208**
Japanese room, **208**
Java, 67, **223**
Jerusalem, 76
Johannesburg, 254, **256**
Johnstown, 143
Jordan River, 286
Jugo-Slavia, 120
Jungle, 266
Jute, 213, 221, 277, 288, 290, 294, 298

Kangaroo, **3**
Kansas, 148
Kauri gum, 258
Kauri pine, 258
Kayak, **7**
Kenya, 287
Khartum, 229, 287
Kicking Horse Pass, 72, **74,** 91
Kidderminster, **283**
Kimberley, 254
Kingston, **101**
Kirkcaldy, **283**
Kitchener, **101, 104**
Kolinsky, **3**
Komati River, **263**
Kootenay River, 59
Korea, **211**
Kosciusko, Mount, 221, 292
Kraal in Natal, **255**

Labrador, 180, 183, 289
Labrador Current, 132
Lake Country, 278
Lake Erie, 144
Lake Louise, **15**
Lake Michigan, 148
Lake of the Woods, **19, 102**
Lake Superior, 107
Lake Winnipeg, 91, 99, 100
Lancashire, 273, 281
Land's End, 282
Laplander, **185**
Lard, 148
Lead, 191, 249
Lead in Canada, 52
Leather, 196
Leeds, 273, 274, **283**
Leicester, **283**
Leipzig, 200
Lemon, 156, 176, 237, 245, 257, 290, 291
Lena River, 209
Leningrad, 196
Lentils, 286
Lethbridge, **102**
Lettuce, 156
Lettuce in Bagdad, **272**
Level, 47
Lhasa, Tibet, 76
Liard River, 59
Lichen, 210
Lima bean, 156
Lime, 156
Linen, 30, 191, 221, 277, 278
Linoleum, 277
Linseed, 99, 287
Linseed oil, 42
Liverpool, 188, 196, 221, 278
Loading boats, **146**
Lobster, **126,** 292
Lobster trap, 290
Locomotive, **197, 198,** 281
Locust, 288
Locust tree, 293
Loganberry, 64
Logging, **36,** 37, 287
Logging railway, **118**
Logwood, 261
London, England, 76, **186,** 188, 200, 270
London, Ont., **101**
Los Angeles, 159
Louisiana, **153,** 160
Lowlands of Scotland, 277, 287
Lumber, 156
Lumbering, 155
Lunenburg, 124, **130,** 131, 136
Lynx, 6
Lyons, 200
Lytton, 63

Mackenzie River, 2, 60, 76, 195, 291, 295
Mackenzie River navigation, 10, **11**
Mackerel, 124, **126,** 188, 289, 290
McKinley Mount, 221
Madras, **271**
Magdalena River, 167, **169,** 175
Mahogany, 241, 261, 262, 287, 294, 298
Mahogany in West Africa, **268**
Malaria, 290
Malay, 249, **251,** 270
Malay Peninsula, 249
Malay States, 253
Malaya, 253
Malta, 293
Mangoes, 291
Mangrove, 241
Manhattan Island, 140
Manitoba, **122,** 151, 282
Maple-sugar, 201
Maritime Provinces, 286, 291, 292
Marseilles, 188, 199
Marten, **3,** 6
Marten trap, **8**
Maryland, 160
Maté, 167, 176
Matterhorn Peak, **189**
Mauritius Island, 286, 288, 289, 293
Mecca, 76
Mekong River, 210
Melbourne, 245, 292
Melon, 294
Melville Lake, 123
Mendoza, **178**
Mersey River, 196, 278
Mesopotamia, 288, 289, 293
Metal goods, 281
Mexico, 282
Mexico City, 67
Michigan Lake, 148
Middlesbrough, 274, **283**
Milan, 200
Milk, 88, 151
Millet, 202, 213, 218, 289, 291, 294, 298
Mining, Chap. V.
Mining town, 152
Mink, **3**
Minneapolis, 221
Minnesota, 148, 151
Mississippi River, 160
Mohawk Valley, 143
Mojave Desert, **162**
Mongolia, 206
Monkey, 175, 241, 266
Monsoon, 217, 289, 290, 291, 292, 296, 297

Montana, 151
Montevideo, 172
Montreal, 75, 99, 286, 292, 296
Montreal Harbour, **105**
Moosejaw, **102**
Mosquito, 241, 290
Mother-of-pearl, 55
Motor-car, 147, 221
Mount Logan, 76
Mount Robson, 56, 75
Mount Shasta, **149,** 156
Moving pictures, **158,** 159
Mulberries, 205
Murray River, 249
Musk-ox, 10
Muskrat, **3,** 5, 201
Mutton, 175, 176, 270

Nairobi, 288
Nanaimo, 55
Naples, 201
Natal, **255**
Natural gas, 91
Nebraska, 148
Negroes, 234, 262
Negroes of Canada, 265
Nelson, 52
Nelson River, 21
Nelson-Saskatchewan River, 195
New Brunswick, **122,** 123, 282
Newcastle, 199, 274, **283**
Newfoundland, 124, 127, **129,** 287, 288, 289, 290, 291, 292, 294, 296
New Glasgow, 55
New Guinea, 221
New Orleans, **142,** 160
New South Wales, 286, 293, 297
News-print, 38, 119
New York City, 140, **141,** 143, 221
New Zealand, 38, 42, 76, 192, 196, 245, 257, 270, 286, 291, 294
Niagara Falls, 76, 96, **101,** 103
Nickel in Canada, 52
Nicobar Islands, 286, 288, 293, 295
Nigeria, 123, 238, 261, 265, 286, 287, 288, 289, 290, 292, 295, 297
Niger River, 222, 225, 238, 286, 287, 293
Nile River, 222, 225, 226, **227,** 287, 292, 294
Nitrate, **165,** 172
Nomad, 206, 230
North Battleford, **102**
North Channel, 278
North Downs, 273
Northern Canada, climate, 2; farming, 10; people, 2; surface, 1; transport, 2
Northern Plain, Canada, 10
Northern Plain of Europe, 188
North Island, 258
North Sea, 270, 273, 288
Northumberland Strait, 286
Norway, 120, 183, 191
Norwich, **283**
Notre Dame Mountains, 51
Nova Scotia, 55, **122,** 124, 282
Nursemaid of South Africa, **267**
Nuts, 167
Nyasa Lake, 225
Nyasaland, 287, 288, 291

Oasis, 209, 237, 238
Oats, 92, 99, 144, 151, 202, 288, 289, 293
Obi River, 209
Ohio, 147
Oil palm, 241
Oil well, 159
Ojibway Lake, 21
Okanagan Valley, 155
Oldham, **283**
Olive, 42, 156, 176, 237, 294
Olive tree, 233, **240**
Onion, 202, 286, 289, 294, 297
Ontario, **122,** 123, 201, 291, 292
Opium, 213
Oporto, 199
Opossum, **3**
Orange, 156, 160, 176, 233, 237, 245, 249, 257, 261, 286, 288, 289, 290, 291, 294, 297
Osaka, 221
Ostrich, **235**
Ostrich farm, 257
Ostrich feather, 67, 230, 233
Ottawa, 99, **101,** 104, **105**
Otter, **3**
Owen Sound, **101**
Oxen, **197, 198**
Oyster, 124, **126,** 140
Oyster fisheries, 293

Paddy, 250
Paisley, **283**
Palestine, 286, 287, 288, 289, 290, 294, 295
Palm kernel, 262, 292
Palm nut, 262, 286, 290
Palm oil, 262, 287, 292
Pamir, 205
Pampas, 168
Panama, 163, 167, 168
Panama Canal, 38, 100, 168
Paper, 201
Para, 175
Paraguay, 163, 164, **165,** 167
Paraguay tea, 167, 176
Parana River, 168
Paris, France, 188, 200
Parliament buildings, Ottawa, **105**
Parliament buildings, Alberta, **93**
Parliament buildings, Winnipeg, **109**
Parrot, 175, 241
Parsnip River, 59
Partridge, 266
Partridge shooting, 287, 294
Pass, 68
Passes through Rockies, **74**
Paterson, N.J., 123
Peace River, 59, 60, 195
Peace River Pass, **74**
Peach, 156, 233, 245, 287, 289, 293, 294, 297, 298
Pea-fowl, 266
Peanut, 262, 289, 291, 295
Pear, 205, 233, 286, 289
Pearl, **126**
Pearl fisheries, 290
Pearl fishing, 288
Pearl shell, **126**
Peas, 202, 296
Penang, 92
Pennine Mountains, 274
Pepper, 123, 261
Perfume, 238
Persia, 230
Persian Gulf, 210, 289
Persian lamb, **3**
Peru, 163, 164, **166,** 168
Peterborough, **101,** 104
Petrograd, 196
Petroleum, 55
Pheasant shooting, 295
Philadelphia, 139, 140
Piedmont, 139
Pig, 42, 148
Pilchard, **126**
Pine, 160
Pine-apple, 156, 250, 257, 261, 290, 295, 298

Pine River Pass, **74**
Pit props, 116
Pittsburgh, 144
Plague, 269
Plaice, **126,** 188
Plate River, 168
Platinum, 42, **166,** 167
Ploughing in North Africa, **243**
Ploughing in Australia, **252**
Plum, 156, 205, 286, 294, 297
Plymouth, 282
Poland, 76, 195, 196
Pomegranate, 294
Poncho, 163
Poppy, 209, 218
Poppy planting, 296
Pork, 148
Port Arthur, Ont., 294
Port Arthur, Manchuria, **212**
Port Elizabeth, 67
Porterage, **197, 198**
Porters in Africa, **236**
Portland, 155
Portland Channel, 52
Port Nelson, 103
Porto Rico, **129**
Portsmouth, 282
Portugal, **129**
Portuguese, 192
Potatoes, 42, 151, 286, 287, 291, 294, 297
Potomac River, 139
Pottery, **170,** 191, **271,** 281
Poultry, 297
Prague, **193,** 199
Prairie Provinces, 291, 293, 294
Prince Albert, **102**
Prince Edward Island, **122,** 289, 297
Prince George, 60
Prince Rupert, 60, **61,** 75, 104, 136
Prince of Wales's Ranch, **89**
Prospector, 43, **45**
Prune, 156
Prune drying, **150**
Puget Sound, 156
Pulp-mills, 38
Pulp-wood, 289
Punjab, 288
Purse-seine, 26
Puzzle of British Empire, **279**
Puzzle on England, **280**
Puzzle of British Industry, **283**
Pyrenees Mountains, 183, 188

Quail, 266
Quarter-section, 84
Quebec City, 99, 104, 201, 286
Quebec Province, 123, 195, 201, 292
Quebracho, **165**
Queen Charlotte Islands, 34
Queensland, 245, 296
Quesnel, 60
Quinine, 67
Quinnat salmon, 25
Quito, 67, **169,** 175

Rabbits, **3,** 201, 245, 246, **248**
Rabbit snare, **8**
Raccoon, **3**
Radishes, 202
Raffia, 241
Rafts, 155, **157**
Railways of Argentina, 171
Raisins, 30, 156, 176
Rand, 257
Raspberry, 64, 205, 293
Rattan splitting, 290
Raw silk, 123
Red cedar, 59
Red Deer, **102**
Red River, 21, 91, 100, 104
Red Sea, 225
Regina, 92, 99, 104
Reindeer, **197, 198**
Rhine River, 192, 270
Rhodesia, **267,** 286, 289, 294, 295
Rhone River, 199
Rhone Valley, 188
Rice, 156, 160, 175, 202, 209, **211,** 213, 218, 230, 233, 249, 286, 289, 290, 291, 293, 295
Rice threshing, **153**
Rift valley, 225
Rio de Janeiro, 67, 135, 175, 221
Rockhampton, 67
Rocky Mountains, 56, 59, 152
Rocky Mountain goat, 60, **65**
Rocky Mountain sheep, 60
Rocky Mountain Trench, 59
Roman Empire, 187
Root crops, 295
Royal Canadian Mounted Police, **4**
Rubber, 92, **165,** 167, 270, 281, 292
Rubber plantation, 250
Rubber tree, **251,** 287, 293, 294
Ruby, 76, 167
Rudolph, Lake, 225
Russia, 30, 79, 84, 96, 120, 180, 282
Russian peasant, 79

Sable, **3**
Sage-brush, 63, 151, 159, **162**
Sahara Desert, 225, 230, 234, 287, 293, 297
St. Andrews, N.B., 136
St. Boniface, **102**
St. Catharines, **101,** 104
St. John, 99, 107, 286, 296
St. Lawrence River, 83, 96, 195, 296
St. Malo, 136
St. Thomas, **101**
Salmon, Chap. III., **23, 126,** 156, 296
Salmon cannery, **24, 31,** 67
Salmon-fishing, **28**
Salmon ladder, **31**
Salmon trap, 30, **32**
Salt-bush, 246
Saltpetre, 164
Samoa Islands, 297
Sand-storm, 257
San Francisco, 156
Santos, 175
Sao Paulo, 175
Sardine, 124, **126**
Sargasso Sea, 135
Sarnia, 100, **101**
Saskatchewan, 91, **122,** 151, 201, 282
Saskatchewan River, 21, 100, 195
Saskatoon, 91, 99, **102,** 107
Saw-mill, 38, 156
Saw-mills, B.C., 67
Scandinavian people, 188
Schenectady, 144
School, **244**
Schooners, 127, **133**
Scilly Islands, 282
Scotland, 184, 195, 201, 288, 289, 293, 296, 297
Scrub, 246, **276**
Seal, **126,** 156
Sealing, 288
Sea-otter, **3**
Seattle, 156
Section, 84
Seine, 124
Seine River, 192
Selkirk, **102**
Selkirk Mountains, 51

Sesame, 289, 294
Seychelles Islands, 290, 297
Shaft of mine, 47
Shanghai, 214
Shawl, 230
Sheep, 30, **165, 166,** 167, 168, 171, 201, 205, 233, 238, 245, 249, 253, 274, 286, 287, 288, 290, 293
Sheep's-back hills, 14, 17
Sheep of Argentina, **177**
Sheep of Australia, **247**
Sheep ranch, 151, 160, 258
Sheep-shearing, 290, 291, 293
Sheffield, 281, **283**
Shickshock Mountains, 51
Ship, **236**
Shipbuilding, 199, 278, 292
Shipping of Britain, 270
Ships on Great Lakes, 144
Shipyards, 278
Shrine, **220**
Siam, **220**
Siberia, 217
Siberian Railway, 210
Sierra Leone, 261, 288, 289, 290, 292, 296, 297
Sierra Nevada Mountains, 156
Silk, 67, 119, 123, 156, 191
Sitka spruce, 34
Silver, 152, **166,** 167, 249
Silver in Canada, 52
Simla, 288
Simon Fraser, 63
Singapore, 67, 253, 288
Sirocco, 293
Sisal, 282, 288, 297
Skate, 128
Skating, 292, 297
Skeena River, 30, **32**
Skiing, 292, 297
Skip, 47
Skunk, **3**
Slash, 111
Slaves, 265
Sleighing, 297
Smelt, 286
Snakes, 266
Snood, 127
Snow-flake, 13
Snow-shoeing, 297
Sockeye salmon, 22, **27**
Socotra, 290, 295, 296
Soda, 143
Sole, **126,** 188
Somaliland, 286, 290
Soo Canal, 221
Sounding-lead, 127
South Africa, 38, 52, 96, 253–7, 286, 287, 289, 290, 291, 292, 293, 296, 297
South America, Chap. XIII.
Southampton, 282
South Australia, 296, 297
South Georgia Islands, 67, 288
South Island, 258
South Saskatchewan River, 88
Spain, 42, 123, **129,** 180, 187, 200
Spaniards, 192
Spices, 270
Spinach, 156, 202
Spinifex, 246
Spinning, **194,** 281
Spinning in West Africa, **264**
Sponge, **126**
Sport in Norway, **185**
Spring salmon, 25, **27**
Spruce, 59, 201, 287
Squirrel, **3**
Staking a claim, 44
Stamping mills, 48
Starfish, 128
Steamship, **197, 198**
Steppes of Russia, 84, 183
Stockholm, 200
Stocking, 144
Stork, **215**
Strait of Belle Isle, 292
Straits Settlements, 253, 286, 288, 295
Stratford, **101**
Strawberries, 286, 296, 297
Sturgeon, **126**
Sudan, 234
Sudbury, 52
Sudd, 226
Suez Canal, 221
Sugar, 92, 156, **165, 166,** 175, 176, 282
Sugar-beet, 151, 282
Sugar-cane, 167, 230, 245, 286, 287, 289, 292, 293, 294, 295
Summerland, B.C., **66**
Summit Lake, 60
Sunflower, 88
Superior, Lake, 107
Swansea, 281, **283**
Swanson Bay, 67
Sweater, 144
Sweden, 120
Swift Current, **102**
Swine, 201
Switzerland, 191
Sydney, N.S., 55
Sydney, Australia, 76, 221, 245, 292
Syracuse, N.Y., 143

Tamarack, 287
Tanganyika, 288
Tanganyika, Lake, 107, 225
Tangerine, 290, 292
Tapioca, **232**
Tasmania, 245, 286, 291
Tay River, 277
Tea, 42, **165,** 213, 218, 257, 270, 287, 288, 289, 290, 295, 296
Tea planting, 290
Teak, 291
Temple, 230
Termite nest, **231**
Tête Jaune, 59
Texas, 160
Thames River, 270
Thetford Mines, 52
Threshing, 294, 295
Threshing in South Africa, 287
Tibet, 205, 206, 210, 214, 217
Tides, 107
Tien-tsin, 67
Tiger hunt, **207**
Tigris River, 213, 288, 289, 293
Timbuktu, 238
Timmins, 52
Tin, **166,** 191, 249, 250, 265
Tin mine, **251**
Tip-top Hill, Ont., 123
Tobacco, 160, 167, 176, 201, 281, 286, 287, 288, 290, 291, 294, 295, 296, 297
Tobogganing, 292
Tokio, 221
Toledo, 144
Tomatoes, 295
Tornadoes, 289, 296
Toronto, Chap. IX., 75, 96, 100
Toucans, 175
Town in desert, 238
Township, 84
Trade-winds, 135, 245
Transcontinental railways, 99
Transportation in Korea, **211**
Trap, 6, **8**
Trap-nets, 124
Trapper, 286
Trapper's home, 5

Trapper's tent, **7**
Trapping, 5
Trawl, 124, 127, 128, 290
Trawler, 273
Tree ferns, **284**
Trent River, 30
Trinidad, 76, **129,** 295
Trolling-line, 29
Tropical calms, 132
Tropical forest, 164, **173**
Tropical rain forest, 241
Troy, N.Y., 143
Turf, 292
Tundra, 187, 209
Tunny, **126**
Turkey, 88, 201
Turnips, 291
Turpentine, **161**
Turtles, 287
Tweed cloth, 277
Tweed River, 277
Tyne River, 274
Typhoon, 294

Uganda, 291
Underclothing, 144
Ungava Peninsula, 1, **16**
United States, 55, 92, 124, 192, 281, 282
University of Saskatchewan, 91
University of Toronto, **98,** 103
Ural Mountains, 183
Uruguay, 163, **166**
Utica, N.Y., 144

Vancouver, 38, 72, 75, 99, 100, 136, 286, 294
Vanilla, 167
Vegetables, 289
Vein, 47, 48
Veld, 253, 254
Venezuela, 163, **166,** 172
Venice, 188
Verkhoyansk, 107
Vetch, 286, 298
Victoria, B.C., 38, 104, 201, 286
Victoria Falls, Rhodesia, 76, 286
Victoria Nyanza, 226
Vineyards, 176
Virginia, 160
Vistula River, 192, 196
Volcano, 258
Volga River, 192
Vosges Mountains, 191

Wales, 281
Walnut, 156, 209, 282, 290
Walsall, **283**
Warrington, **283**
Warsaw, 196
Wash, 273
Washington, D.C., 139
Washington State, **154,** 155
Water-power, 92, 120, 191, 201
Weaving, **194,** 281
Weaving in West Africa, **264**
West Africa, 96, 261–5
West Indies, **260,** 261, 281, 291
Westerly winds, 132, 183
Western Australia, 297
Western cedar, 34
Western cedar forest, **114**
Western hemlock, 34
Wetaskiwin, **102**
Weyburn, **102**
Whale, **126**
Whaling, 288
Wheat, 67, 72, 92, 99, 144, 151, 155, **166,** 168, 171, 202, 213, 218, 230, 233, 237, 245, 249, 286, 287, 288, 289, 290, 291, 293, 295, 296, 297
Wheat of Argentina, **177**
Wheat belt, 151
Wheat blight, 87
Wheat of England, 273
Wheat field, **90,** 148, 155
Wheat harvesting, **153**
Wheat routes, 100
Wheelbarrow, 213
White ant, **231**
Whitefish, **126**
White fox, **3**
Wild goat, 152
Williamette River, 155
Williamette Valley, 156
Windsor, Ont., **101**
Wine, 123, 176, **194,** 199
Wine-drinking, 123
Winnipeg, Chap. IX., 91, 99, **102, 109**
Wisconsin, 151
Wolf, 5
Wolverine, 5
Wood, uses of, 115, 116
Wood pulp, **186,** 191, 201
Wool, 175, 270, 281, **283**
Wool from Australia, **275**
Woollen goods, 273, 274
Worsted, 191, 273
Wrath, Cape, 277
Wyoming, 151

Yale, 64
Yangtsze-kiang, 210, 218
Yam, 286, 288, 293
Yarmouth, England, 273
Yarmouth, N.S., 136
Yellow fever, 167
Yellowhead Pass, 56, 68, 72, **74,** 75, 76, 100
Yellowstone National Park, 152, **162**
Yorktown, **102**
Yosemite Falls, Cal., 76
Yucca tree, **162**
Yugo-Slavia, 196
Yukon, **122**
Yukon River, 195
Yukon Territory, 52

Zanzibar, 92, **232, 243, 267,** 289, 293, 295
Zambezi River, 67, 225, 286
Zinc, 191, 249
Zinc in Canada, 52

PRINTED BY R. CLAY & SONS, LTD., AT BUNGAY, SUFFOLK, IN GREAT BRITAIN.